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ENVIRONMENTAL ASSESSMENT

FOR

GYPSY MOTH ERADICATION

Wasatch-Cache & Uinta
National Forests

Prepared For

WASATCH-CACHE, and UNTA NATIONAL FORESTS

United States
Department of
Agriculture

FOREST
SERVICE



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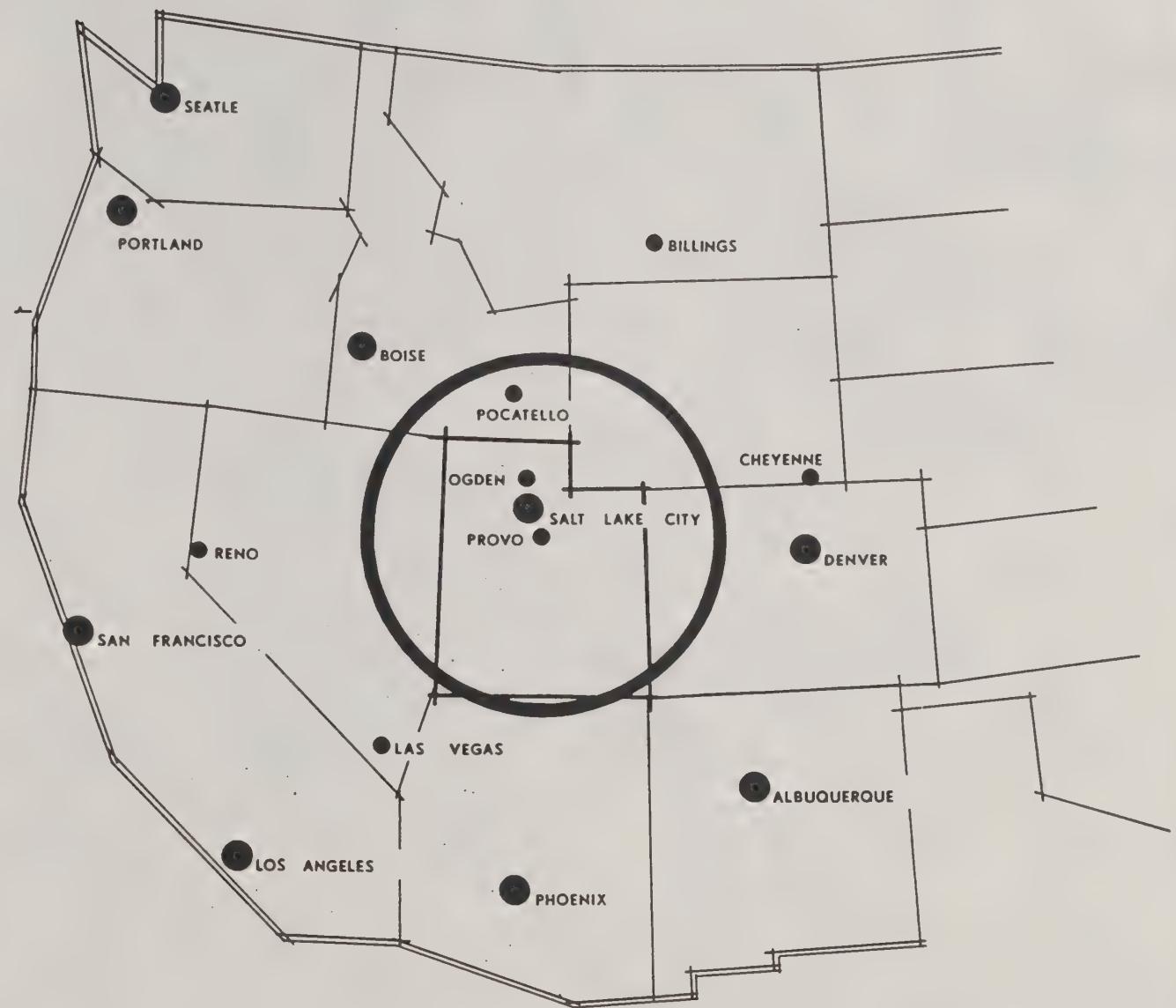
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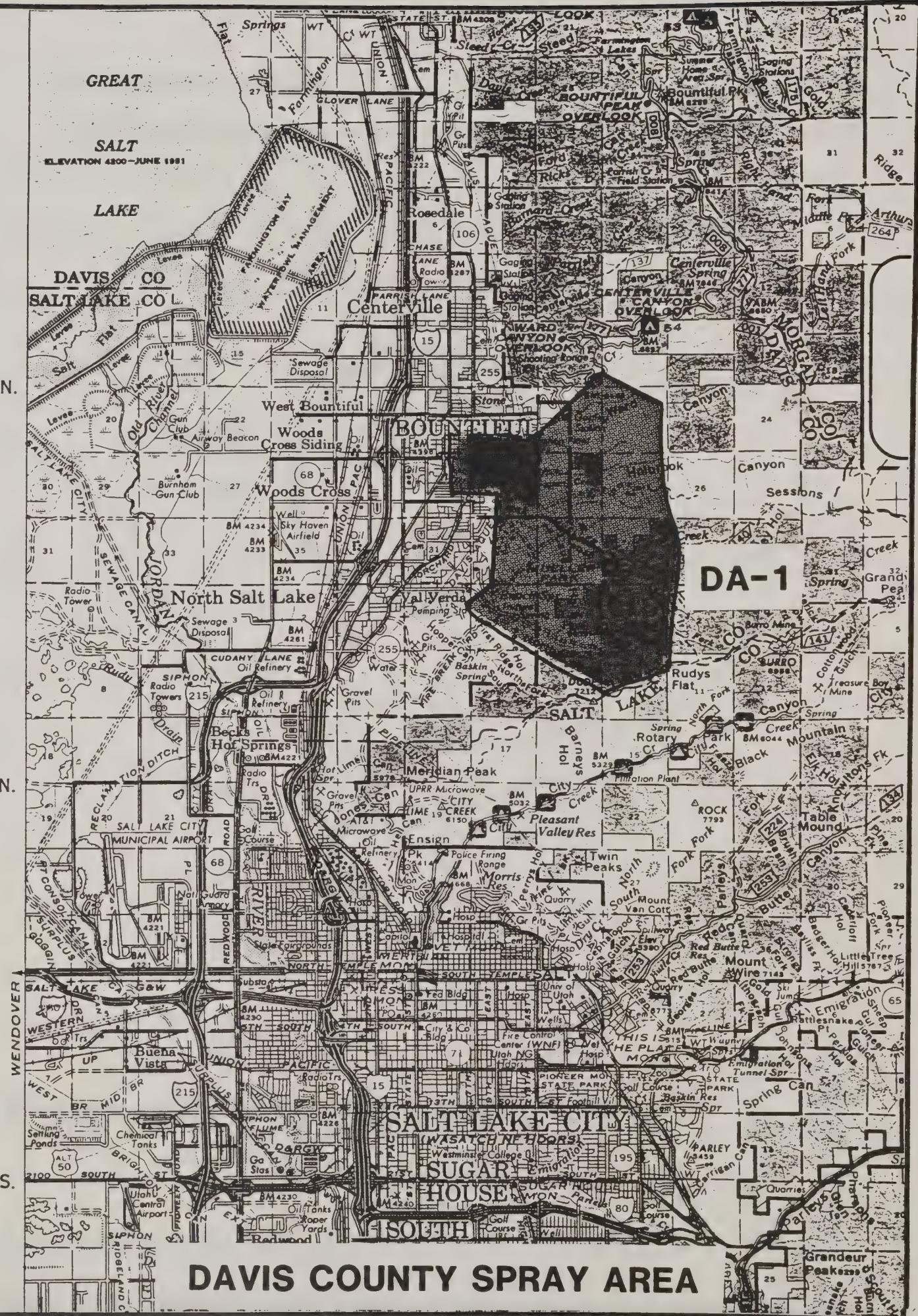
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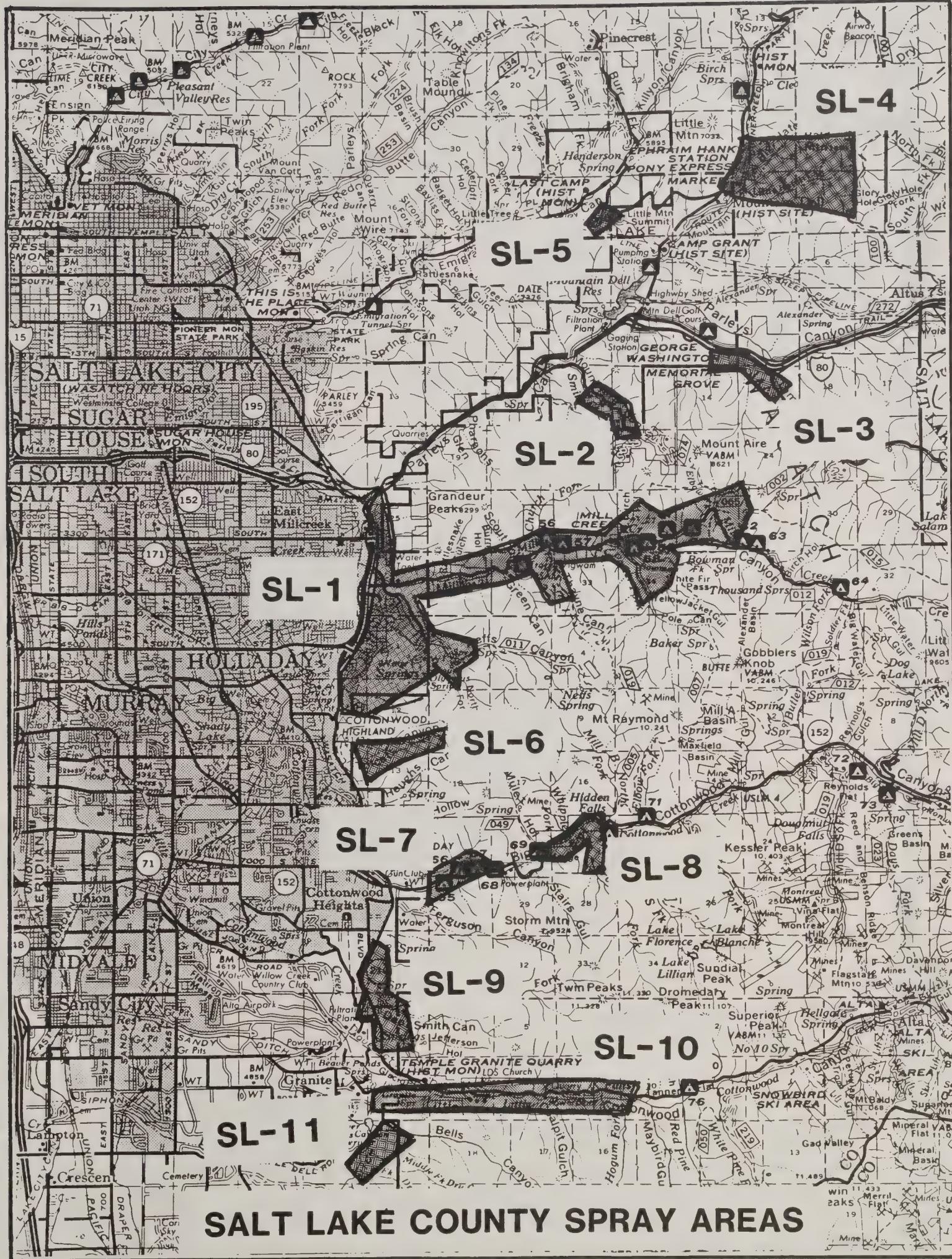
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MAJOR URBAN AREAS





SALT LAKE COUNTY SPRAY AREAS

UTAH

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S E P T 1949

L A K E

UTAH COUNTY SPRAY AREA

Lincoln

CHAPTER I

PURPOSE OF AND NEED FOR ACTION

CHAPTER I - PURPOSE OF AND NEED FOR ACTION

INTRODUCTION

Gypsy moth caterpillars have defoliated millions of acres of trees and shrubs in the northeastern United States. In recent years, isolated populations of the insect have been detected in Colorado, Idaho, Oregon, Washington, and California. In 1988, the gypsy moth and its life stages were found in Utah along the east bench of Salt Lake County, and in Davis County on the east bench of Bountiful City. They have been found in isolated areas along the east bench of Utah County, particularly south of Provo Canyon to Rock Canyon, and east to the Squaw Peak Trail Road.

A naturalist first brought the gypsy moth to Massachusetts from Europe in 1869, hoping to develop a disease-resistant silkworm and establish a new textile industry. During his experiments, some of the gypsy moths escaped. Natural spread is mostly by air currents. Larva are carried relatively short distances by wind, seldom over 1 mile. Gypsy moth now infest much of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, and Michigan. They have also spread into the Ohio River Basin and threaten to spread south along the Appalachians.

The gypsy moth is a notorious hitchhiker. The female moth lays her eggs on solid surfaces such as trees, outdoor furniture, recreational vehicles, firewood, automobiles, etc. When these objects are later moved, gypsy moths may be transported long distances. Families or students transporting items from areas infested by the gypsy moth are thought to be the source of infestations in Utah, and the most significant contributor to long-range spread, Nationwide.

The gypsy moth has a tremendous capacity to increase in numbers and feed on a wide range of trees and shrubs. Small populations can rapidly build to large infestations, causing widespread defoliation; trees are weakened and sometimes killed after successive defoliations. Defoliated forests are susceptible to disease, fire, and soil erosion. After successive defoliations, other plant and animal life may be affected. Aesthetics and recreational and economic values of parks, forests, and wooded homesites are affected by defoliation. Infested areas may be subject to restrictive quarantines and control activities to prevent further spread of the insect, affecting local exporters.

PURPOSE AND NEED

The Utah Department of Agriculture in cooperation with USDA, Animal and Plant Health Inspection Service, is proposing an eradication spray program. The need for this action is based on the presence of the infestation and impacts of potential infestations on surrounding areas, the entire State of Utah, and other currently uninfested areas.

In 1985, the Forest Service completed a programmatic Final Environmental Impact Statement (FEIS) and a Plain Language Addendum on Gypsy Moth Suppression and Eradication. This Environmental Assessment has been tiered to the 1985 FEIS.

The purpose of the proposed action is to eradicate gypsy moths in their present location in Davis, Salt Lake, and Utah Counties, and to prevent their further spread within the State. Vegetation Statewide is broken up by open valleys, mountain peaks, large blocks of coniferous forests, sagebrush, and grasslands. There is no Statewide block of vegetation that could be affected.

In 1989, there was an eradication project for treatment of 1,190 acres. Treatment areas were located on private and National Forest System lands.

There is a need to followup with an enlarged eradication program in early 1990. Followup is necessary to ensure that the 1989 investment is not lost and that eradication is complete. It is estimated that it would require 4-5 years for complete eradication.

WHAT IS PROPOSED

The 1990 eradication program would re-treat the 1,190 acres completed in 1989, plus additional acreage found to be infested since that project. The 1990 program would treat a total of 9,153 Federal and 10,911 non-Federal acres of known infested areas where egg masses and caterpillars are strongly believed to be present. The 1990 eradication program was determined by the presence of multiple catches found in the 1989 traps. The spray period would tentatively be between May 1 and June 1, 1990, weather conditions could change the timing of the spraying.

ISSUES AND CONCERNs

To begin an analysis, it is necessary to determine what questions need to be answered before a decision can be made. The following questions, or issues and concerns, were developed from comments received at public meetings held during the scoping or comment period which ran from January 16, to February 10, 1990. A record of comments is on file in the Wasatch-Cache and Uinta National Forest Supervisor's Offices.

The issues and concerns were further refined by a series of meetings and contacts with State, county, city, and Federal personnel. Criteria were then established to use in analyzing environmental impacts to determine how well each alternative addressed issues or concerns.

ISSUE 1, **Human Health** - Concerns would be about the aerial application of chemical and biological insecticides to urban and rural areas in relation to direct or indirect contamination of drinking water, watersheds, wells, and garden crops. Concerns would be about direct or indirect human exposure (including children and pregnant women) to insecticides and the continued need to monitor human health during the application process.

Responsiveness of each alternative to this issue is indicated by these evaluation criteria:

- 1a. The degree of risk to water quality and riparian habitat
- 1b. The degree of risk to watersheds, wells, and garden crops
- 1c. The degree of risk to the public during application
- 1d. The degree of monitoring during and after application

ISSUE 2, **Effects on Non-Target Species** - Concerns would be about the possible effects of chemical and biological insecticides on non-target organisms, including possible gypsy moth natural enemies, wildlife, honeybees, and aquatic insects.

Responsiveness of each alternative to this issue is indicated by this evaluation criterion:

- 2a. The degree by which possible gypsy moth natural enemies, wildlife, honeybees, and aquatic insects are affected by the alternative

ISSUE 3, **Alternatives to Eradication Programs** - Concerns would be about a need for research on the behavior of the gypsy moth to determine the possible role of natural enemies to maintain populations at low levels. Concern would be about the viability of an eradication approach and the need for long-range planning and research for an integrated pest management approach.

Responsiveness of each alternative to this issue is indicated by this evaluation criterion:

- 3a. How does the alternative affect long-range planning and research for integrated pest management?

Issues 1-3 were taken from the FEIS, Gypsy Moth Suppression and Eradication Projects, dated 1985.

ISSUE 4, **Gypsy Moth Quarantine** - There would be a need for a rapid reduction in the population of gypsy moths in order to reduce or eliminate the imposed quarantines.

Responsiveness of each alternative to this issue is indicated by this evaluation criterion:

- 4a. The amount of time to reduce the length of gypsy moth quarantines

ISSUE 5, **Economic Effect** - Concern would be about the possible negative impact of the gypsy moth on National Forest System lands and private lands, if the current infestation were to expand unchecked. Concern would be about the possible negative effects of a continued gypsy moth infestation on property values. Concern would be over economic impact of annual suppression projects on State and Federal budgets, if gypsy moth were not eradicated.

Responsiveness of each alternative to this issue is indicated by these evaluation criteria:

- 5a. The degree by which the alternative is in line with the overall committee plan for total eradication of gypsy moth

- 5b. How the alternative reduces the negative impact of gypsy moth on property values

- 5c. The degree by which the alternative reduces the negative impact on National Forest System lands

ISSUE 6, **The Effect on Threatened and Endangered Species and Sensitive and Locally Rare Species of Lepidoptera** - Concern would be for Peregrine falcon in the Salt Lake and Utah County areas. Concern would be over non-target moths and butterflies along the Wasatch Front.

Responsiveness of each alternative to this issue is indicated by these evaluation criteria:

- 6a. The degree by which the alternative reduces the impact on concerned wildlife species

- 6b. The degree to which the alternative impacts sensitive and locally rare moths and butterflies

ISSUE 7, Wilderness - Concern would be for pest treatment in and adjacent to a portion of Mt. Olympus, Twin Peaks, and Lone Peak Wilderness.

Responsiveness of each alternative to this issue is indicated by these evaluation criteria:

7a. The degree of impact the alternative has on the Mt. Olympus, Twin Peaks, and Lone Peak Wilderness

7b. The degree of impact on the wilderness from helicopters flying over the wilderness

7c. The degree long-term wilderness experience is impacted by continued eradication by gypsy moth

Issues 4-7 were taken from the Environmental Assessment for Gypsy Moth Eradication Spray Program, Salt Lake County, Utah, 1989.

MANAGEMENT CONCERNS

The following are additional concerns identified by the Forest Service:

- a. Location and protection of Threatened and Endangered plant and animal species as well as sensitive species
- b. How would eradication mesh with existing activities in the proposed treatment areas?
- c. The degree the alternatives comply with Standards and Guidelines found in the Wasatch-Cache and Uinta National Forest Land and Resource Management Plans
- d. Protection of users in recreation facilities
- e. Risk of using helicopters over residential areas

COOPERATING AGENCIES

The USDA, Forest Service, Wasatch-Cache National Forest is the lead agency for development of this Environmental Assessment. Cooperating agencies include: The Uinta National Forest, US Fish and Wildlife Service, U.S. Animal and Plant Health Inspection Service (APHIS), Utah State University Extension, Utah Division of Lands and Forestry, Utah Department of Agriculture, Salt Lake City Forester, Bountiful City, Provo City, the Mount Olympus Community Council, Wilderness Society, and the Lepidoptera Society. This Environmental Assessment was prepared by COLEMAN ASSOCIATES, 190 South Center, Midway, Utah 84049, under Purchase Order No. 40-8490-0-0180. (also Salt Lake City-County Health Department)

CHAPTER II

ALTERNATIVES, INCLUDING PROPOSED ACTION

CHAPTER II - ALTERNATIVES, INCLUDING THE PROPOSED ACTION

INTRODUCTION

This chapter describes a range of alternatives for the eradication of **gypsy moth**. Each alternative was developed in response to identified issues and concerns. This chapter is comprised of four parts: (1) A description of the process used to formulate the alternatives; (2) a description of the alternatives considered, but eliminated from detailed study; (3) a comparison of the alternatives.

ALTERNATIVE DEVELOPMENT PROCESS

The 1990 Utah Gypsy Moth Eradication Program began officially in the fall of 1988. A decision and action committee was formulated, representing a variety of local, State, and Federal agencies, and representatives from the public sector. As a result, an eradication program was conducted in 1989. The results of the 1989 program and the 1989 Environmental Assessment for Eradication of Gypsy Moth were reviewed to determine alternatives to be considered in 1990.

Public issues and management concerns were analyzed by the Wasatch-Cache and Uinta National Forests as part of their Land and Resource Management Plans. The Land and Resource Management Plans were reviewed as well as current public involvement. Alternatives were developed to address the issues.

DESCRIPTION OF ALTERNATIVES

Alternatives Eliminated From Detailed Study

A number of alternatives was considered. A list of the alternatives eliminated from detailed study along with the rational for their elimination follows:

1. **Eradication by single entities, individuals, cities, counties, State, and Federal agencies** - This alternative was dropped because the 1985 FEIS on Gypsy Moth Suppression and Eradication implied direction for establishing a cooperative effort between agencies. It would be difficult to determine who was doing what and if activities were successful.
2. **Use new biological control methods** - It appears that no other biological methods would be more effective or different than those tried on early infestations of gypsy moth. It was proven early that biological insecticides were an effective control measure.

ALTERNATIVES CONSIDERED

Alternative A - No Action/NEPA

For this Environmental Assessment, the No Action alternative means that no control measures would take place. Gypsy moth would continue to exist and expand to available habitat throughout the State. Isolated infestations would be subject to regulatory action imposed by APHIS or State regulatory agencies in the form of quarantines, inspections, and some treatment of infested materials shipped from the quarantine areas. (Reference pages 14-15 of the 1985 FEIS on Gypsy Moth Eradication and Suppression.)

Alternative B - Chemical Insecticide Treatment

Under this alternative, chemical insecticides such as carbaryl, trichlorfon, diflubenzuron, and acephate would be used for treatment. These insecticides are registered by the Environmental Protection Agency (EPA) for applications against gypsy moth infestations. Implementation of this alternative would provide immediate relief from the presence of gypsy moth larvae in communities and recreation areas. Potential allergic reactions associated with larval droppings and the hairs of gypsy moth larvae would be reduced. (Reference pages 15-20 of the 1985 FEIS on Gypsy Moth Eradication and Suppression.)

Alternative C - Biological Insecticide Treatment

Under this alternative, formulations of Bacillus thuringiensis Berliner var. kurstaki, (B.t.), a biological insecticide, would be applied to areas identified for treatment. B.t. has had proven success in the State of Oregon. The effectiveness of biological insecticides is dependent on proper application timing. The desired effect of a biological insecticide is more dependent upon weather conditions, especially rain, than chemical insecticides. The FEIS states that the desired effect of a single application of B.t. in suppression projects and the reduction in product costs make B.t. economically efficient to use in some areas. (Reference pages 20-22 of the 1985 FEIS on Gypsy Moth Eradication and Suppression.)

Alternative D - Integrated Pest Management

Under this alternative, integrated pest management would take advantage of all factors which could be used to control or manage a pest population. All procedures, treatments, or materials which could be used to detect and locate new infestations or which could be used effectively to eliminate such infestations would be combined in a coordinated program for gypsy moth eradication. An integrated approach to gypsy moth eradication will include: (1) three aerial applications and spot ground treatment as needed with B.t., (2) a Statewide detection program using highly effective pheromone baited traps, (3) mass trapping following pesticide application to increase the probability of removing males from any residual mating population of moths, (4) a program to identify new residents from gypsy moth infested areas for inspection of potential gypsy moth contaminated articles, (5) and quarantines to limit movement of potentially infested materials to new areas, (6) to better delineate areas requiring future treatment as well as increasing pressure on residential populations. (Reference pages 22-24 of the 1985 FEIS on Gypsy Moth Eradication and Suppression.)

ALTERNATIVE COMPARISON

	ALT. A, No Action	ALT. B, Chemical Insecticide Treatment	ALT. C, Biological Insecticide Treatment	ALT. D, Integrated Pest Management
ISSUE 1, HUMAN HEALTH	<p>Without treatment, there would be some risk to water quality and riparian habitat. The protective cover of trees along streams would be subject to the defoliation of the gypsy moth larvae. This would affect the hydrologic cycle. Riparian habitat and water quality would decrease.</p> <p>Heavy gypsy moth feeding might effect water quality by dumping large amounts of frass into streams. Some streams have shown large increases in fecal coliform & fecal streptococcus bacteria during gypsy moth defoliation (Corbett and Lynch 1987).</p>	<p>All insecticides considered in this alternative are currently registered by EPA for the control of gypsy moth larvae. This means that in EPA's judgement, available studies indicate that none of these chemicals are likely to cause unreasonable adverse effects in people or the environment when used properly. Special application precautions would be taken near streams, riparian habitat, and municipal water developments.</p>	<p>The use of biological insecticides <u>B. t.</u> or the biological insecticide derived from the gypsy moth nucleopolyhedrosis virus (NPV) would have no impact on water quality or riparian habitat.</p> <p>It is highly unlikely that the registered use of <u>B. t.</u> or NPV applied during gypsy moth suppression or eradication projects would pose a human health hazard. However, because of reported infections from <u>B. t.</u> occurring in occupationally exposed workers, caution should be exercised when working with concentrated mixtures.</p>	<p>It is highly unlikely that the registered use of <u>B. t.</u> or NPV applied during gypsy moth suppression or eradication projects would pose a human health hazard. However, because of reported infections from <u>B. t.</u> occurring in occupationally exposed workers, caution should be exercised when working with concentrated mixtures.</p>
ISSUE 2, EFFECTS ON NON-TARGET	<p>There would be no treatment under this alternative; therefore, there would be no impact on gypsy moth natural enemies, wildlife, honeybees, or aquatic insects. Gypsy moth could eliminate food sources used by other non-target butterflies.</p>	<p>The chemicals considered for use with this alternative are registered with EPA for the control of several different insects. It is very likely that non-target organisms, including gypsy moth natural enemies, wildlife, honeybees, and aquatic insects would be impacted.</p>	<p>The biological insecticides considered for use with this alternative, <u>B. t.</u> and NPV, are registered with EPA for the control of gypsy moth. It is very unlikely that non-target organisms, including gypsy moth natural enemies, wildlife, honeybees, and aquatic insects would be impacted. <u>B. t.</u> would impact other lepidoptera species that are in the same development stage as gypsy moth.</p>	<p>The biological insecticides considered for use with this alternative, <u>B. t.</u> and NPV, are registered with EPA for the control of gypsy moth. It is very unlikely that non-target organisms, including gypsy moth natural enemies, wildlife, honeybees, and aquatic insects would be impacted.</p>

ISSUES	ALT. A, No Action	ALT. B, Chemical Insecticide Treatment	ALT. C, Biological Insecticide Treatment	ALT. D, Integrated Pest Management
ISSUE 3, ALT. TO ERADICATION	The alternative allows for natural eradication of gypsy moth. Nothing would prohibit natural process from occurring; however, there is no history of natural eradication of gypsy moth.	This alternative would hinder the natural eradication of gypsy moth-Natural predators would not remain in the currently affected areas, if gypsy moth larvae were not available as food.	This alternative would not hinder natural eradication of gypsy moth.	Natural eradication is an integral part of integrated pest management. There does not appear to be any effects on that process.
ISSUE 4, GYPSY MOTH QUARANTINE	With this alternative, there would be no reduction in quarantine length. If gypsy moth remain in their present locations along the Wasatch Front, it appears that additional quarantines and restrictions would be necessary.	This alternative would reduce or eliminate gypsy moth populations, thus, reducing the need for quarantines and restrictions.	This alternative would reduce or eliminate gypsy moth populations, thus, reducing the need for quarantines and restrictions.	This alternative would reduce or eliminate gypsy moth populations, thus, reducing the need for quarantines and restrictions.
ISSUE 5, ECONOMIC EFFECT	This alternative is not in line with the overall committee plan for total eradication of gypsy moth. There would be no reduction of impacts on private property. It has been projected that eradication costs are greater in years 1 and 2, however, if left unchecked suppression costs continue to increase beyond those of eradication. After year 6 of eradication, costs would be for monitoring and maintenance only.	This alternative is in line with the overall committee plan for total eradication of gypsy moth. There are, however, environmental reasons for not using chemical insecticide treatment. This alternative would reduce the negative impacts of gypsy moth on forest and private land.	This alternative is in line with the overall committee plan for total eradication of gypsy moth. This alternative would reduce the negative impacts of gypsy moth on forest and private land.	This alternative is in line with the overall committee plan for total eradication of gypsy moth. This alternative would reduce the negative impacts of gypsy moth on forest and private land.

ISSUES	ALT. A, No Action	ALT. B, Chemical Insecticide Treatment	ALT. C, Biological Insecticide Treatment	ALT. D, Integrated Pest Management
ISSUE 6, EFFECT ON T & E AND SENSITIVE & LOCALLY RARE LEPIDOPTERA SPECIES	<p>Certain wildlife species might benefit if no action is taken to eradicate the gypsy moth. Those species that prey on gypsy moth predators are the most likely to benefit from this alternative.</p> <p>However, those wildlife species that live in the areas infested by gypsy moth would have their habitat destroyed and might need to relocate to uninested areas.</p>	<p>Wildlife species that live in infested areas would benefit from the eradication of gypsy moth. Wildlife species that are susceptible to chemical insecticide would be affected.</p> <p>There are no endangered Lepidoptera occurring in the treatment areas.</p>	<p>Wildlife species that live in infested areas would benefit from the eradication of gypsy moth. The wildlife habitat would return to its natural condition, thus, providing necessary cover and food.</p> <p>There are no endangered Lepidoptera occurring in the treatment areas.</p> <p>There would be no direct impacts on Peregrine Falcon from <u>B. t.</u></p> <p>Indirect effects might include reduction in prey base.</p> <p>No direct or indirect impacts are anticipated on June sucker.</p>	<p>Wildlife species that live in infested areas would benefit from the eradication of gypsy moth. The wildlife habitat would return to its natural condition, thus, providing necessary cover and food.</p> <p>There are no endangered Lepidoptera occurring in the treatment areas.</p> <p>There would be no direct impacts on Peregrine Falcon from <u>B. t.</u></p> <p>Indirect effects might include reduction in prey base.</p> <p>There are no direct or indirect impacts anticipated on June sucker.</p>

ISSUES	ALT. A, No Action	ALT. B, Chemical Insecticide Treatment	ALT. C, Biological Insecticide Treatment	ALT. D, Integrated Pest Management
ISSUE 7, WILDERNESS	<p>This alternative would have a great deal of impact on the wilderness. There are approximately 770 acres infested in Mt. Olympus Wilderness, approximately 182 infested in Lone Peak Wilderness, and approximately 65 acres infested in Twin Peaks Wilderness. The No Action Alternative would allow current infestations to increase at or above the same rate they have been increasing since becoming established in these areas. Vegetation in the infested areas would continue to be defoliated and could eventually die. Visual impact would be most noticeable to the many wilderness visitors. If wilderness were not treated, infestations would continue outbreaks from the wilderness.</p>	<p>This alternative would benefit the three Wilderness currently infested by gypsy moth. The unsightly impact of gypsy moth defoliation would be reduced or eliminated. There would be a period of time when visitors would be restricted from certain areas within each Wilderness. Visitor restrictions would follow the plan developed for chemical treatment of gypsy moth eradication.</p>	<p>This alternative would benefit the three Wilderness currently infested by gypsy moth. The unsightly impact of gypsy moth defoliation would be reduced or eliminated. There would be a period of time when visitors would be restricted from certain areas within each Wilderness. Visitor restrictions would follow the plan developed for biological insecticide eradication of gypsy moth.</p>	<p>This alternative would benefit the three Wilderness currently infested by gypsy moth. The unsightly impact of gypsy moth defoliation would be reduced or eliminated. There would be a period of time when visitors would be restricted from certain areas within each Wilderness. Visitor restrictions would follow the plan for integrated pest management. (gypsy moth eradication)</p>

CHAPTER III

AFFECTED ENVIRONMENT

CHAPTER III: AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the existing biological and physical environmental components of the area which might be affected by the proposed action and alternatives.

I. General Location

The areas to be treated on the Wasatch-Cache National Forest are within the Wasatch Front Management Area. This is the highly visible, steep, front face between Clinton, Utah on the north, to Draper, Utah on the south end of the Salt Lake Valley. This management area rises from an elevation of about 4,500 feet in the valley foothills, to nearly 10,000 feet atop some of the peaks. Vegetative communities are primarily shrubs and grass on the lower slopes, with aspen and conifer at higher elevations.

The areas to be treated on the Uinta National Forest are within the Pleasant Grove Management Area. This is the highly visible, steep, front face between Alpine, Utah and Hobble Creek Canyon, located near Springville, Utah on the south. This management area rises from an elevation of about 4,500 feet in the valley foothills, to 11,030 atop Mt. Timpanogos. Vegetation communities are very similar to those located in the Wasatch Front Management Area--shrubs and grass on the lower slopes with aspen and conifer at higher elevations. Since these Forests are adjacent, the Management Areas are contiguous. Both Management Areas are adjacent to or include a wilderness. The resource descriptions below cover both Management Areas.

Private land to be treated make up over 50 percent of the proposed treatment area (10,911 acres). The majority of the proposed treatment area is located near Salt Lake City, Utah. Eight of the proposed treatment areas contain residential areas, and 11 of the proposed treatment areas are within the Salt Lake Valley (SL.1 - SL.5, SL.7 - SL.10).

The proposed treatment area also involves the Provo-Orem area located in Utah Valley. The communities are located in north central Utah along the Wasatch Front. About 5,489 acres are proposed for treatment in Provo Canyon and in the northeast foothills of Provo City.

The largest urban area proposed for treatment is located within or adjacent to the City of Bountiful, Utah (DA.1). Generally, the treatment area includes the east foothills of Bountiful. About 5,045 acres are proposed for treatment.

2. Treatment Area Descriptions and Existing Facilities

DA-1 is located in the southeast corner of Davis County. There are 7,362 acres total with 4,048 acres owned privately, 2,317 acres Wasatch-Cache National Forest, and 997 acres public and municipal. Less than one-half of the spray block is in residential areas, including three schools, one hospital, and churches. The elevation starts at the northwest corner of the spray block at 4,380 feet and climbs to 7,300 feet on the southeast corner. The east part of the spray area has four major canyons, with floor elevation at 5,200 feet and summits at 7,000 feet. The canyons are plagued with strong east breezes in the early morning and during frontal passages. Mueller Park, located east of the City of Bountiful, is a major picnic area. One golfcourse and several small parks are in the spray area. Several flood control and open irrigation reservoirs at the mouths of these canyons. There are several locations on the east foothills appear to be excellent heliports.

SL-1 is the largest spray block in Salt Lake County. It is located in the center of the East Valley Bench, encompassing Olympus Cove, Neff's Canyon, and Millcreek Canyon. There are 3,543 acres in the spray block with 1,891 owned privately, 45 acres owned by Salt Lake City, and 1,607 acres of National Forest System lands on the Wasatch-Cache National Forest. The largest private landholder is the Boy Scouts of America with 188.5 acres. The privately-owned land is mostly residential property in the Olympus Cove and Millcreek areas. Four schools, one shopping center, and four churches are within the residential area. Millcreek Canyon has a Boy Scout Camp and two restaurants in the spray block. Millcreek Canyon is one of the heaviest used canyons along the Wasatch Front. There are several picnicking areas and hiking trails in the block. The stream is heavily fished, and the canyon is a favorite spot for joggers and cyclists. There is also a private cabin area. Neff's Canyon is the watershed for a commercial water bottling company and is the gateway to the Mt. Olympus Wilderness. This spray block includes 483 acres in the Wilderness. The elevation range for this block is between 4,840 and 7,920 feet. East drainage winds are prevalent in the early morning, along with variable down and up drafts.

SL-2 is the only treatment block that is in total private ownership. It is a small cabin community in Mt. Aire Canyon, 3.6 miles east of the mouth of Parley's Canyon. It is a small block of only 72 acres. The canyon is steep, and the elevations range from 6,000 to 6,800 feet. The block would best be treated in conjunction with SL-3, SL-4, and SL-5.

SL-3 is a small block of only 181 acres in Parley's Canyon at the mouth of Lamb's Canyon. The Wasatch-Cache National Forest has 79 acres, and 102 acres are owned by Salt Lake City Corporation. The north spray boundary is bound by I-80. Elevations range from 6,000 to 6,520 feet. It would best be treated along with areas SL-2, SL-4, and SL-5. Lamb's Canyon is a critical watershed for Salt Lake County.

SL-4 covers the Hatch Canyon areas. Wasatch-Cache National Forest contains 320 acres of the area. Salt Lake City owns 600 acres of the area and the rest is owned privately. Elevations range from 5,940 to 7,860 feet. The area is a watershed for Salt Lake City and is just north of the Little Dell Dam project.

SL-5 is the smallest spray block, encompassing 51 acres. There are 10 acres on the Wasatch-Cache National Forest, and 41 acres of private or State right-of-way. The block is Little Mountain Summit, with elevations ranging between 6,040 to 6,360 feet. The site is mostly watershed. The area contains a location for a heliport and is equal distance to SL-2, SL-3, and SL-4.

SL-6 is Tolcat Canyon. It is located south of Olympus Cove and is entirely on the Wasatch-Cache National Forest. All 287 acres are in the Mt. Olympus Wilderness. Elevations range from 5,200 to 8,400 feet. This elevation change takes place in less than 7,200 feet, giving an average slope of 44 percent. This area is within the Salt Lake City watershed. This block can be sprayed using the same support location as SL-1, located less than 4,000 feet away.

SL-7 is a 119-acre block in the mouth of Big Cottonwood Canyon. The area is on the Wasatch-Cache National Forest, with 18 acres in Twin Peaks Wilderness. The spray block includes both sides of the canyon highway. This area is within the Salt Lake City watershed. Two picnic areas are located in the treatment area. Just west is a water treatment plant. Elevations range between 5,050 and 7,680 feet.

SL-8 is 4.4 miles from the mouth of Big Cottonwood Canyon. The spray block is 275 acres, with 29 acres on the Wasatch-Cache National Forest. There are 164 acres of wilderness, 16 acres of State land, and 66 acres of private land. This area is within the Salt Lake City watershed. One public restaurant is in the spray block, along with several cabins. The area contains Mill B South Fork Picnic Area/Lake Blanche Trailhead. The spray block is between two steep-walled canyons and has elevations ranging from 5,800 to 7,680 feet.

SL-9 is a 626-acre block mostly east of Wasatch Boulevard, between 7800 and 9400 south. The area contains 478 acres of privately-owned land, mostly residential. There are 148 acres on the Wasatch-Cache National Forest; none of the area is Wilderness. Part of this area is within the Salt Lake City watershed. Two forest drainages are in the area and part of a commercial nursery. Elevations range between 5,000 and 6,400 feet. SL-7, SL-8, SL-9, SL-10, and SL-11 could probably be served out of the same heliport.

SL-10 is 4.1 miles long and 0.17 miles wide up the bottom of Little Cottonwood Canyon. It covers 555 acres, with 328 acres on the Wasatch-Cache National Forest. There are 60 acres in the Lone Peak Wilderness. There are 167 acres of private land within the spray block. The canyon is an open Glaciated canyon, with elevations ranging between 5,200 and 6,720 feet. The area is within the Salt Lake City watershed. Two hydro-power plants and some private cabins are located in the area.

SL-11 is a 218-acre block of mostly private land. Five of the acres are in the Lone Peak Wilderness. It is located south of Little Bell or Bell's Canyon. The area contains large residential lots. Bell's Canyon acts as a watershed for residents in the spray block and for the area west of the spray block. One water storage reservoir is just west of the spray block. Elevations range between 5,040 and 6,050 feet. The block could be serviced by the same heliport as areas SL-7, SL-8, SL-9, and SL-10.

UT-1- The area is within Utah County and includes the steep canyons between the North Fork of the Provo River, and the Forest boundary near Olmstead. Also included is the Provo River and Canyon bottom near Vivian Park and the mouth of Provo Canyon. The east boundary is Cascade Mountain, and the south boundary is Rock Canyon. The area contains residential areas, canyon homes, Bridal Veil Falls Tram, Hope Campground, Canyon Glen, Rotary Park picnic areas, and the Rock Canyon Overlook. The total area is 5,489 acres, with 1,803 Non-Federal and 3,686 Federal. The Federal acres are National Forest System lands within the Uinta National Forest.

Current access to the Forest portion of the proposed treatment area is by the Squaw Peak Trail. This is a double-lane National Forest System road that extends to the south from Provo Canyon. The lower section of the Squaw Peak Trail (Provo Canyon to Hope Picnic Ground) is surfaced for 4.6 miles. The remaining miles include a double-lane, winding and partly graveled road for 3 miles to the Rock Canyon Campground. A dirt road, 1.5 lanes wide, continues for 6 miles. These are graded and drained.



DA-1





SL-2



SL-3



SL-4



SL-5



SL-6



SL-7



SL-8

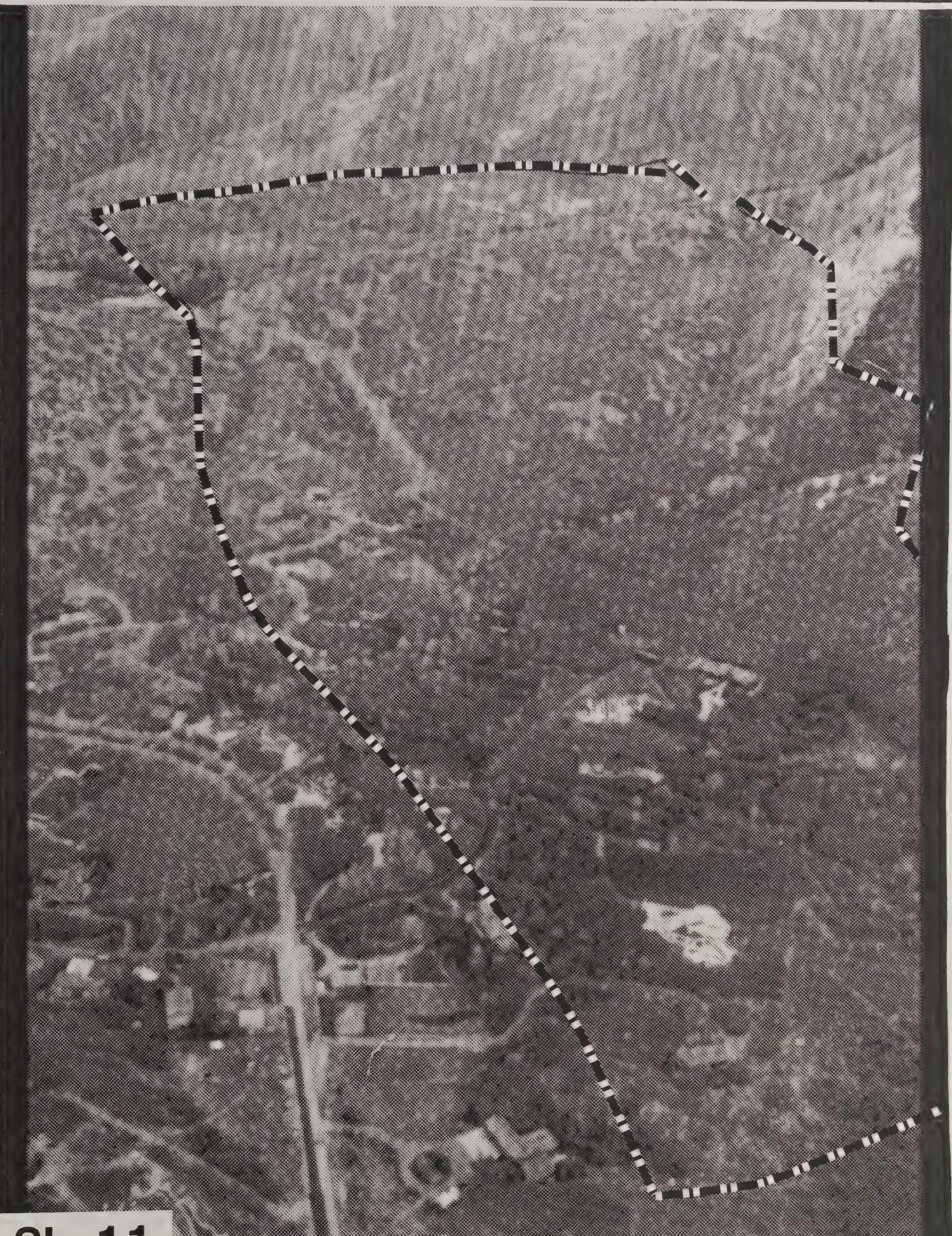


SL-8(lower)



SL-9





SL-11



PHYSICAL AND BIOLOGICAL ENVIRONMENT

I. Air

The topography and climatic conditions along the Wasatch Front, coupled with the concentrated population, combine to make the air subject to high pollution levels. Temperature inversions often trap air and pollutants that are normally emitted into the atmosphere from automobiles and industrial activities within the valley. Prevailing winds are from the southwest, and pollution generated in the valley blows across the mountains, although it is dispersed. Applications would only be applied if weather conditions favored effective insecticide penetration and dispersal into target areas.

Acoustic Environment (Existing Sound Levels) - Valley industry and activity noise can be sensed from the proposed treatment areas, especially on the immediate west-facing slopes along the Wasatch Front, from Springville to Bountiful City. Other area noise is presently limited to aircraft, a few motorcyclists using various areas along the Wasatch Front, and traffic using the canyon highways and other roads.

2. Soils

The geology and landform above the bench lands are highly variable. The complexity results from the variety of chiefly sedimentary rock that has been faulted and folded, and/or glaciated.

Soils in the proposed project area are primarily Horrocks, extremely stony loam on 5-to-50 percent slopes, and stony terrace escarpments.

3. Water

Water is vital on and adjacent to the Management Areas within the proposed project. Watersheds within these two Management Areas contribute approximately 240,500 acre-feet of water to streamflow and, in addition, supply a large but unmeasured quantity of underground aquifers. The watershed, soil substrata, and vegetation perform the vital function of receiving, storing, and dispersing precipitation falling on the area.

The Salt Lake City municipal watersheds are managed in accordance with the Salt Lake City Watershed Management Plan and in cooperation with City and Salt Lake County agencies. The Cottonwood Canyons and other watersheds surrounding Salt Lake City provide the municipal water supply.

Streams along the Wasatch Front that originate on National Forest System Lands meet or exceed State water quality standards. Present monitoring is limited to Cottonwood Canyons on the Salt Lake District and some monitoring on the Pleasant Grove District by Provo City and Uinta Forest personnel.

Most of the National Forest System Lands included in this proposal for area UT.1 and DA.1 has been acquired by the Forest Service and has Weeks Law status.

Some floods and mudrock flows have occurred in the floodplains of the Wasatch Front since the lands were acquired.

4. Climate

The Wasatch Mountains influence Davis, Salt Lake, and Utah Valley weather. Elevations of the various peaks along the Wasatch Front range from 8,500 to approximately 12,000 feet. Precipitation amounts vary from about 11 inches in the vicinity of the Salt Lake airport. The average annual precipitation at the airport is approximately 11 inches and increases to approximately 18 inches near the foot of the Wasatch Mountains to well over 30 inches at the high elevations. The average seasonal snowfall ranges between 40 and 50 inches in the lower valley, to as much as 70 inches in the foothills of the proposed eradication area. Most of the summer precipitation is associated with thunderstorms which coincides with the peak of maximum defoliation of host trees and shrubs by the gypsy Moth.

5. Minerals

Many metalliferous minerals are found on the Salt Lake and Pleasant Grove Ranger Districts. Significant production occurred from both National Forest System and private lands. Little mining activity has occurred in recent years.

Mineral removal activity has been for common variety materials such as sand and gravel in the area along the Bonneville Bench. Most of this material has been removed from private land, although some has been taken from the acquired public lands under authority granted by mineral reservations.

Leases for oil and gas rights have been consummated on a large portion of the lands along the Wasatch Front.

6. Geology and Land Forms

The proposed treatment areas along the Wasatch Front have a complex geologic history. This began as long as 300 to 500 million years ago and continues into the present with vertical uplift and faulting, along with smaller scale erosion and landsliding which has resulted in the present day topography.

The landform and geology is highly variable, and several landtype associations are identified in this proposal area.

The Benchlands Association is a flatter, shoulder area; gradients and relief are relatively low. In the undisturbed areas, the ground surface appears moderately stable and is not subject to much erosion. Both morainal and colluvial parent materials are present, and soils are typically deep and of moderately fine texture. Some gravel and cobble content is present. The few steep slopes that occur on the benchlands are subject to high surface erosion potential, and these slopes have a high potential for soil instability under saturated conditions. In undisturbed areas, the ground surface is quite stable; the vegetative production potential is high. Some of the proposed treatment areas are within this association.

At the base of the Wasatch Front is the Streambottom Alluvium and Beach Deposits Association. This includes alluvial fans and floodplains, colluvial gravel at the base of the mountains, and beach deposits along the shoreline of ancient Lake Bonneville. This Association is composed of lands and gravel shed from the adjacent highlands. Some of the higher standing beach deposits are being eroded slowly at the present time under natural conditions. Because of the sandy and gravelly nature of these deposits, there should be few mass stability problems; however, earthquake hazards along the Wasatch Front pose a significant problem to structures. A considerable portion of this Association is located on private land and is being used for sand and gravel sources. The majority of the proposed treatment area is within this Association.

BIOLOGICAL

I. Vegetation

The plant communities recognized within the two management areas are conifer, low aspen, low shrubs and grass, mountain sagebrush, mountain brush, aspen, mixed deciduous, mountain mahogany, and mixed brush. The conifer forest community is dominated by white fir, Douglas-fir, and sub-alpine fir. Oak and maple are the primary species in the mountain brush, mixed deciduous, and mixed brush vegetative types. The low brush, and grass and mountain sagebrush communities cover the bulk of the remaining land area. The low brush type includes some sagebrush and a large quantity of snowberry, wild rose, and mountain lilac. Mountain mahogany is found mainly below 8,000 feet on steep, south-facing slopes. Rock terrain is found through out the front area. No endangered or threatened vegetation species are known to exist within the Management Area boundaries.

Ecologically the vegetation types are quite distinct. Conifer stands occur primarily at higher elevations on north- and east-facing slopes. The aspen forests occur below and are intermixed with the conifers. These forests are usually on moderately deep to deep soils, which possess favorable moisture conditions. The low aspen type is normally confined to the lower edge of slopes where soils are moderately deep and where some runoff water augments natural precipitation (Crowther and Harper, 1965).

Conifer communities lend diversity to the landscape, provide cover for game, and stabilize soils on very steep slopes. They provide only moderate amounts of food for most forms of wildlife. They probably play a role in the control of snow avalanches. Interspersed aspen forests provide spectacular color in autumn and large amounts of food for all forms of animal life. This community is extremely useful for wildlife habitat, soil stability, and watershed cover.

In elevation, oak and maple community variants occur below the aspen zone. These are drier communities in which most of the site resources are channeled into shrubby growth rather than into under-story herbs. They often form a tangle of head-high shrub growth, with only dry leaves on the ground. In this respect, they contrast sharply with the lush, herbaceous under-story of the two aspen communities.

The red leaves of the bigtooth maple provide a spectacular native plant in the autumn. In addition to their scenic values, the oak-maple communities provide considerable forage and valuable cover for a wide variety of animals, ranging from the ruffed grouse and rock squirrel to the mule deer and elk.

The more conspicuous forest and tall shrub communities are interspersed with a variety of foothill grassland, sagebrush, or other low shrub communities. In most cases, these low-growing vegetative types occupy dry sites resulting from extreme isolation incident to topographic exposure, soil depth, exposure to wind, or various combinations. In general, these vegetative communities produce only moderate amounts of forage and cover for wildlife, but they lend variety to the landscape. Because of this, they foster greater biotic diversity and enhance scenic values. They are also of great importance where they are utilized by big game for winter food supplies.

Riparian or (wetlands), generally from personal knowledge, the streamside vegetation consists of at least two habitat types: Narrow leaf Cottonwood, Populus angustifolia/Water Birch, Betula occidentalis c.t. The herbaceous layer is highly variable and may range from being nearly devoid of vegetation to dense undergrowth of Kentucky Bluegrass, Poa pratensis/Sweet-cicely, Osmorhiza chilensis and/or Meadow Horsetail, Equisetum arvense at lower elevations. These elevations are from the mouths of Wasatch Front Canyons approximately 4,700 foot elevation to roughly 7,000 feet elevation. From about 7000 foot elevation to the upper reaches of the draw bottoms, generally Water Birch, Betula occidentalis/Dogwood, Cornus sericea c.t. occupies the site. The herbaceous layer is also highly variable--a result of the variability in shrub cover. Meadow Horsetail. Equisetum arvense is commonly present with False Solomon-seal, Smilacina stellata, Stinging Nettle, Utrica dioica, and Fowl Manna-grass, Glyceria strata, and may include Kentucky bluegrass, Poa pratensis.

Wetland vegetation is found as narrow strips adjacent to stream channels or draw bottoms, or in patches generally less than a half acre, associated with springs or seeps.

Residential Areas - Vegetation within three of the proposed treatment areas includes fine hardwood specimens on rights-of-way, private lots, and city parks. Many of the private lots include the native vegetation found along the Wasatch Front. Often, private lots include a variety of fruit trees and small garden plots producing various vegetables. The proposed treatment dates will probably precede most fruit and garden production, perhaps with the exception of peas.

2. Wildlife

As use and activities increase, the game populations concentrate and some areas become over-used. In many places, the more palatable species for deer, such as cliff rose, bitterbrush, fourwing saltbrush, and sagebrush, have disappeared or are disappearing from the plant community. If repeated infestations occurred on big game winter range, many of the preferred forage plants could be lost. Many of these plants are already stressed from overuse. Oak, particularly on west-facing slopes, could be lost with repeated defoliation. This would effect the hydrological cycle.

There are many species of non-target organisms, including all other forms of insect life, (over 1,000 species of moths and butterflies occur along the Wasatch Front. Appendix, letter Dr. Douglas A. Boyce.) birds, mammals, fish, reptiles, and amphibians that may be present in the scheduled treatment areas at the time of application. The other insects may be terrestrial or aquatic, pollinators, gypsy moth parasites, and predators.

Big game animals along the Wasatch Front that might be associated at various times with the proposed treatment areas and considered as non-target animals, include mule deer, elk, moose, Rocky Mountain goat, black bear, and cougar.

Small Game Animals and Fur Bearers - Common species that might be found within or adjacent to the proposed treatment areas, and considered as non-target, include squirrel, mink, muskrat, beaver, snowshoe rabbit, skunk, weasel, fox, and badger. Many of the fur bearers require habitat closely associated with streams and other bodies of water.

There are 5 upland game birds that inhabit part of the area within the Wasatch Front. At various times they might be found in or adjacent to treatment areas and are non-target. They are the blue grouse, ruffed grouse, California quail, ring-necked pheasant, and chukar partridge.

Several hawks, all non-target, the golden eagle, and some owls are known to be permanent residents within the vicinity of the Wasatch Front. They are associated within or adjacent to the proposed treatment areas.

Other Animals and Birds - There are Avian species inhabiting the area whose diet is partially made up of lepidoptera species. They may include the following: Downey woodpecker; brown creeper; blue-grey gnatcatcher; mockingbird; hermit thrush; western kingbird; barn swallow; American robin; house finch; black-throated grey warbler; scrub jay; ruby-crowned Kinglet; steller's jay; townstead's solitaire; red-eyed vireo; hairy woodpecker; black-billed magpie; common night hawk; western bluebird; gray catbird; eastern kingbird; rock wren; mountain chickadee; American golden finch; european starling; and pine siskin.

In residential treatment areas, the most common non-target animals in addition to household pets include various birds, small mammals, and agriculture livestock as well as a large variety of insects.

Threatened and Endangered Wildlife - Historical Peregrine falcon eyries have been identified at sites immediately adjacent to some Wasatch Front cities. Hotel Utah in downtown Salt Lake City has had an active eyrie for the past 3 years. No sites are within the proposed treatment boundary, although at least one is within 2 miles.

The Peregrine falcon is an endangered species and is protected by the Threatened and Endangered Species Act of 1973. The endangered species act does not allow "take". Take has been interpreted by federal courts to include federal or state actions that degrade the environment in such a way as to lead to the removal of and endangered species. The historic eyries have not been identified as critical habitat. Irrespective of this fact, the Forest Service has a responsibility, under Section 7 of the Act, not to destroy habitat which would effect the recovery of the species. An immature female and an adult male were sighted at a former eyrie in Slate Canyon in 1988 and 1989. The Peregrine falcon is the only endangered species whose habitat is identified within the vicinity of the proposed treatment areas (UT.1). The Peregrine Falcon feeds primarily on small birds and would not likely be affected by the suppression project. Indirect effects may include the reduction in the Peregrines prey base (which is almost exclusively bird species) due to a temporary reduction in lepidoptera species. The Hotel Utah pair might feed in the Davis and Salt Lake County foothill and canyon treatment areas, although preferred feeding areas include croplands, marshes, and river bottoms. The Utah County pair have been observed taking prey along the Wasatch Front between Rock Canyon and Spring Canyon. Since the proposed treatment area does not extend south of Rock Canyon their feeding area may remain the same. If a reduction of prey base occurs it would be short-term and likely be buffered by the peregrines use of other prey species which do not feed on lepidoptera.

Another threatened and endangered species listed by the U.S. Fish and Wildlife Service is the June Sucker (Lower Provo River). The June sucker is found in the lower reaches of the Provo River adjacent to Utah Lake. The species is well below the National Forest Boundary and outside the treatment area. The sucker feeds along the stream bottom on various macro-invertebrates and other organisms, and spawns in finer gravels in the Provo River during spring. There are no known plants within the area that are listed as threatened or endangered; however, the U.S. Forest Service lists two plants that may occur within the Wasatch Front area as sensitive. Sensitive species are defined as those species which exhibit a current or downward trend in population numbers or habitat. They are *Lesquerella garretti* and *Aster Kingii* variety *Kingii*.

During 1989 a survey for threatened, endangered, sensitive and locally rare species of diurnal lepidoptera was conducted by Dr. Wayne H. Whaley in the proposed Utah 1990 gypsy moth eradication program. No threatened or endangered species were found within the survey boundaries or within a gypsy moth treatment area. Species that can be categorized as sensitive or locally rare were found within the survey area. The Bountiful area was not included within the survey.

SUMMARY

1989 SURVEY FOR T & E, SENSITIVE, AND LOCALLY RARE SPECIES OF DIURNAL LEPIDOPTERA
IN UTAH, 1990 GYPSY MOTH ERADICATION PROGRAM.

NAME	LOCATION	FOOD PLANT	CATEGORY
<u>Nathalis iole</u> (Dainty Sulfur)	Ut. State Park- Not in treatment area	Bur - Marigold (<u>Bidens cernua</u>)	Locally rare, but not of special concern
<u>Incisalia fotis</u> (Early Elfin)	Utah County could be in Ut. I	Cliff-rose (<u>Purshia mexicana</u>)	Sensitive, could be negatively impacted
<u>Lycaena cupreus</u> (Lustrous Copper)	Park City Low elevations. High altitude Wasatch Range	Alpine sorrel (<u>Rumex paucifolius</u>) and <u>Oxyria digyna</u> upper elevations	Sensitive, Not in 1990 treatment area
<u>Lycaena editha</u> (Edith's copper)	Ut. County, South Fork Provo, Salt Lake Co, Little Cottonwood Cy.	Sheep sorrel (<u>Rumex acetosella</u>)	Sensitive, Not in 1990 treatment area
<u>Callophrys sheridani</u> (White-lined Green Hairstreak)	Salt Lake Co, Dry Creek & Mill creek area, Ut.Co. Mouth Provo Canyon.	Shortstem Buckwheat (<u>Eriogonum brevicaule</u>)	Sensitive and in the 1990 treatment area
<u>Euphilotes spaldingi</u> (Utah Summer Blue)	Colonies occur within survey area	Redroot Buckwheat (<u>Eriogonum racemosum</u>)	Locally rare and in 1990 treatment area. No threat if non-persistent Insecticide is utilized
<u>Satyrium saepium</u> (Hedgerow Hairstreak)	Ut.Co. Near Hobble Creek, Salt Lake Co. Near head of Bear Canyon	Deer Brush (<u>Ceanothus velutinus</u>) Mt. Mahogany (<u>Cercocarpus montanus</u>)	Locally rare, Not in 1990 treatment area

NAME	LOCATION	FOOD PLANT	CATEGORY
<u>Satyrium fuliginosum</u> (Sooty Hairstreak)	Salt Lake Co, near head of Bear Cy, & Butt Cy., Ut.Co, North Fork Provo, Near Wildwood.	Silvery Lupine (<u>Lupinus argenteus</u>)	Locally rare, Not in 1990 treatment area
<u>Saturium californica</u> (California Hairstreak)	No colonies are known from survey.	Mt. Mahogany, Deer brush, Chokecherry (<u>Prunus virginiana</u>), Serviceberry (<u>Amelanchier alnifolia</u>) & possible Bitterbrush	Locally rare, Not in 1990 treatment area
<u>Danaus gilippus</u> (Queen)	Ut. Co. near Provo Industrial Park	Several species of Milkweed	Locally rare, Not in 1990 treatment area
<u>Cyllopsis pertepida</u> <u>dorothea</u> (Arroyo Satyr)	Ut. Co. near mouth of Spanish Fork Cy.	Various species of grass	Locally rare, Not in 1990 treatment area
<u>Neominois ridingsii</u> (Ridings Satyr)	Along Wasatch Range in Utah Co, near mouth of Lambs Cy, Salt Lake Co.	Bluebunch Wheatgrass (<u>Elymus spicatus</u>)	Sensitive, Bordering or inside treatment area
<u>Precis coenia</u> (Buckeye)	Collected only once in Ut. Co. near Rock Cy.	Not listed	Locally rare, Not in 1990 treatment area.
<u>Thessalia leanira alma</u> (Paintbrush Checkerspot)	Ut.Co. near Edgemont and Orem.	Paintbrush (<u>Castilleja chroma</u>)	Sensitive, In 1990 treatment area
<u>Speyeria hydaspe</u> <u>sukuntala</u> (Lavender Fritillary)	Salt Lake Co. near the head of City Creek Canyon.	Pine Violet (<u>Viola purpurea</u>), Violet (<u>Viola nuttallii</u>), Blue Violet (<u>Viola adunca</u>)	Sensitive, Not in 1990 treatment area
<u>Speyeria n nokomis</u> (Great Basin Silverspot Fritillary)	Lower valley floors or dry desert areas. Not known to be in Wasatch Range.	Bog Violet (<u>Viola nephrophylla</u>) Not known to be in the Wasatch Range.	Candidate species (Category 2) for federal listing. Sensitive, Not in 1990 treatment area.
<u>Boloria selene</u> (Silver Medow Fritillary)	Ut.Co. east side Utah Lake, Salt Lake Co. north of Bountiful in low valley wet areas.	Bog Violet (<u>Viola nephrophylla</u>)	Sensitive, Not in 1990 treatment area.

Fish - Streams within or adjacent to the proposed treatment areas contain many species of macroinvertebrates. A general list of macroinvertebrate taxa that might be found in the streams associated with the proposed treatment areas is included in the appendix. The proposed treatment with B.T. is not expected to have any effect on the macroinvertebrate taxa. (Personal communication Dr. Fred Mangum, Aquatic Ecologist, Ecosystem Analysis Lab. Provo, Ut.)

Approximately 75 miles of stream furnish fishing opportunities for many thousands of visitors to the Wasatch Front. Fish species are rainbow, brook, cutthroat, and German brown trout.

Management Indicator Species - The Wasatch-Cache and Uinta National Forest Land Management Plans list a total of five terrestrial management indicator species that will be monitored to evaluate (Vegetation) ecosystem response. Twenty-two (22) species were listed to establish population index since insufficient data was not available to establish populations for the selected management indicator species.

3. Visuals

The steep Wasatch Front mountains provide an important scenic backdrop for people living in Salt Lake and Utah Counties. In setting visual quality objectives, the sensitivity of the viewer (a local resident vs. a transient in the area), the distance from which the land is viewed (foreground 0-1/2 mile, middleground 1/2-3 miles, and background 3 + miles), and the landscape variety classification (distinct, physical features) are combined to arrive at standards for management.

The proposed treatment project on private lands and National Forest System lands immediately adjacent to Wasatch Front cities is in the Foreground Visual Inventory classification. There are several gravel removal and other non-vegetated areas, especially at lower elevations. The steep, west-facing slopes of the Wasatch Mountains are visible in the Middleground Visual Inventory classification, usually for long duration periods from locations such as I-15, which bisects the western portion of several Wasatch Front cities. These west-facing slopes are steep, sparsely vegetated lands and extend from the base elevations of 4,600 feet up to 11,000 feet at the summit of some Wasatch Front Peaks. Vegetation at the lower elevations is primarily cheatgrass, bunchgrass, and oak brush which changes to mountain maple, aspen, and clumps of conifer on some of the upper west- and north-facing slopes.

The visual impacts of man's activities are very apparent along these slopes. In addition to borrow pits, there are numerous roads and power transmission lines on adjacent private lands. Off-road vehicle trails and access roads along the base of the mountains present strong visual lines in several directions. These features are increasing by additional use, and the resulting vegetation removal and erosion of the unstable roads and trails adds to the visual impact of man on the land.

The upper slopes of Bountiful Peak, Ensign Peak, Mt. Olympus, Lone Peak, Box Elder Peak, Mt. Timpanogos, Cascade Mountain, and Provo Peak can be seen as the background from portions of Davis, Salt Lake, and Utah Valleys and the Interstate highway system through the valleys.

4. Grazing

Today, only a small amount of recreation horse grazing continues along the Wasatch Front and some sheep grazing remains in Big Cottonwood, Mill Creek, Mountain Dell, City Creek, and Mill Canyon on the Salt Lake Ranger District.

On the Uinta National Forest, all grazing by permitted livestock has been discontinued except for the Chris Flat area directly east of Pleasant Grove.

5. Timber

There are some fair to good stands of timber that are inaccessible by conventional means; however, the value for timber in these management areas is for aesthetic, watershed, and wildlife purposes.

6. Recreation

Salt Lake Ranger District Recreation Resources - Both management areas provide a mix of recreation experiences including developed campgrounds, dispersed camping, driving for pleasure, hiking, hunting, skiing, etc. The majority of the recreation along the Wasatch Front occurs in these management areas.

The Wasatch-Cache is the leading National Forest in providing opportunities for recreation. The Salt Lake Ranger District receives about 30 percent of the developed use generated on the Forest. Most of the developed use occurs during the summer months. Some use of developed facilities occurs during the fall hunting seasons. These facilities are located along main highways usually in the canyon bottoms near streams. According to the Forest Land and Resource Management Plan, deterioration includes loss of vegetation, compaction, and loss of top soil; development of trails, exposed tree roots, and stream bank breakdown. At the time the Forest Land and Resource Management Plan was published there were two major threats to tree vegetation at recreation sites. They were the mountain pine beetle at the Evanston and Kamas Ranger Districts, and soil compaction on all districts. Today the gypsy moth would be considered as a major threat to tree vegetation in some of the canyons located on the Salt Lake District. The Forest Land and Resource Management Plan concluded that protective spraying would be required if large trees were to be maintained at Recreation Sites on the Evanston and Kamas Ranger Districts. Had the gypsy moth been present protective spraying might have been included to other vegetation (shrubs or tree) types for the same reasons.

The Salt Lake Ranger District encompasses a considerable amount of private recreation, such as recreation residents, group organization camps, ski lodges, food services, etc. This is provided by private enterprise on private land and under special-use permit from the Forest Service. Dispersed recreation activities on the Salt Lake Ranger District include driving for pleasure, camping, fishing, hiking, hunting and gathering fuelwood. The most heavily used area includes the Wasatch Front located within and adjacent to the Salt Lake Ranger District.

Pleasant Grove District Recreation Resources - Rock Canyon, and Hope Campground are the only Forest Service developed recreation sites within the proposed spray area. The Forest Service plans to improve the Rock Canyon Campground as the Squaw Peak Trail is improved. Timpanogos Archery Association has an archery range under special-use permit within the area.

The Squaw Peak Trail is a 26-mile road between Provo Canyon and Hobble Creek. Total driving-for-pleasure visits on the road in 1986 were approximately 143,500 visits, accounting for 25,000 visitor days. A large percentage of these visits terminate at the Utah Valley Overlook or at Hope Campground where the pavement ends. Estimated driving-for-pleasure use is 47,000 visits for 8,300 visitor days.

Other undeveloped area uses such as hiking, rock climbing, mountain biking, horseback riding, and picnicking are increasing each year and are presently estimated to account for about 5,000 visitor days within the Rock Canyon drainage.

Other activities, including hunting for big game, small game, and upland birds, are estimated at 2,000 visitor days within the project vicinity. Provo City owns Canyon Glen, and Nunn's Picnic sites within the proposed treatment area.

The steep topography and limited access routes have apparently reduced use in this area below what might be expected for an undeveloped area near a major population center. The other factor that might reduce recreation use is the west-facing aspect and relatively high temperature for mountain area, at least below the 7,500-foot level, because of the adjacent valley temperature influence. Brigham Young University, Utah Valley Community College, and local high school students use Rock Canyon quite extensively for short hiking experiences, some camping, and rock climbing. The trail above the "Y" into Slide Canyon is being used quite heavily for day hiking. There has been some recent activity in hang gliding from the "Y" Mountain area. Cross-country skiing and snowmobile travel are limited because of the difficult access. Some snowmobile use occurs on the Squaw Peak Trail within the Rock Canyon drainage, but it is relatively minor when considering the entire Uinta National Forest. This use is increasing in Rock Canyon.

RECREATION ACTIVITIES OCCURRING IN TREATMENT AREAS

REC. ACTIVITY	DA I	SL I	SL 2	SL 3	SL 4	SL 5	SL 6	SL 7	SL 8	SL 9	SL 10	SL 11	UT I
CITY DEV'L. REC.	X	X		X									
FOREST DEV. REC.	X	X							X	X			X
UNDEVELOPED REC.													
PICNICKING	X	X		X					X	X		X	X
JOGGING & WALKING	X	X		X	X	X			X	X	X	X	X
DRIVING & SIGHTSEEING	X	X		X	X	X			X	X	X	X	X
CYCLING	X	X		X	X	X			X	X	X	X	X
HIKING	X	X		X	X	X	X	X	X	X	X	X	X
HUNTING	X	X		X	X			X	X	X		X	X
BIRD WATCHING	X	X		X	X	X	X	X	X	X	X	X	X
FISHING		X							X	X		X	X
ROCK CLIMBING		X							X	X		X	X
ROCK COLLECTING		X							X	X		X	X
CAMPING		X											X
WINTER RECREATION	X	X		X	X	X		X	X		X		X

7. Cultural Resources

Some cultural resources are in the proposed spray areas. Thomas R. Scott, Archeologist, Wasatch-Cache National Forest, has indicated that no additional survey work is necessary prior to the type of activity planned.

8. Wilderness

The Mt. Olympus Wilderness encompasses 15,856 acres. Total proposed treatment in this wilderness is 770 acres. Proposed treatment area SL. includes 425 acres located in the Mill Creek Canyon Drainage (Thayne Canyon, Porter and Bowman Forks). Approximately 58 acres of Wilderness are located in the mouth of Neffs Canyon and approximately 287 acres located in Tolcat Canyon. The Twin Peaks Wilderness encompasses 12,864 acres. Proposed treatment area SL.7. includes 18 acres located at the mouth of Big Cottonwood Canyon. Proposed treatment area SL.8. includes 164 acres located in Big Cottonwood Canyon and Mill B South Fork Drainage. The Lone Peak Wilderness encompasses 30,088 acres within the boundaries of the Uinta and Wasatch-Cache National Forests. Proposed treatment area SL.10. includes 60 acres located in the bottom of Little Cottonwood Canyon and SL.11. includes 5 acres located near the mouth of Bells Canyon.

The north boundary of the proposed treatment area in Provo Canyon UT.1. is located approximately 1000 feet south of the Mount Timpanogos Wilderness boundary, along the south lines of sections 28 & 29.

CHAPTER IV

ENVIRONMENTAL CONSEQUENCES

CHAPTER IV - ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

INTRODUCTION

The National Environmental Policy Act (NEPA) of 1969 mandated that Federal Agencies would prepare an Environmental Assessment, which is a concise public document to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact; (2) to aid an agency's compliance with the Act when no environmental impact statement is necessary; (3) include brief discussions of the need for the proposal along with alternatives to the proposed action.

This chapter contains a discussion of the direct, indirect, and cumulative environmental impacts of the alternatives described in Chapter II.

By definition, impacts fall under the following three categories:

1. **Direct Environmental Impacts** are those that occur as a direct result of an activity such as treatment for the eradication of gypsy moth.
2. **Indirect Impacts** are those that occur later in time or that occur to other segments of the environment.
3. **Cumulative Impacts** are more complex and uncertain. They are the result of the project taking place over different periods of time.

The intent of this chapter is to provide the basis for alternative comparison. As noted in Chapter I, the analysis of the environmental consequences is driven by a set of evaluation criteria that were developed for each issue area. For easy reference, those criteria are repeated at the beginning of each issue section.

ENVIRONMENTAL CONSEQUENCES

ISSUE I, Human Health - Concerns would be about the application of B.t. to urban and rural areas in relation to direct or indirect contamination of drinking water, watersheds, wells, and garden crops. Concerns would be about direct or indirect human exposure (including children and pregnant women) to insecticide, and the continued need to monitor human health during the application process.

Responsiveness of each alternative to these issues and concerns are indicated by these evaluation criteria.

- 1a. The degree of risk to water quality and riparian habitat
- 1b. The degree of risk to watersheds, wells, and garden crops

Ic. The degree of risk to the public during application

Id. The degree of monitoring during and after application

Alternative A - No Action

Ia. Without treatment, there would be some risk to water quality and riparian habitat. The protective cover of trees along streams would be subject to defoliation from the gypsy moth larvae. This would affect water quality. Riparian habitat and water quality would decrease. If repeated infestations occurred on big game winter range, many of the preferred forage plants could be lost. Many of these forage plants are already stressed from overuse. Oak, particularly on west-facing slopes, could be lost with repeated defoliation. This would affect the hydrologic cycle. Riparian habitat and water quality would decrease.

Ib. Trees and shrubs on watersheds would be subject to defoliation from the gypsy moth larvae. Many plant species in wilderness along the Front would be defoliated by the gypsy moth larvae. Orchards and nurseries would also have the potential to be defoliated as gypsy moth spread through natural means.

Ic. There would be no application of insecticides under this alternative; therefore, there would be no impact on the public.

Id. Monitoring is only necessary to determine the extent the infestation is migrating to other areas.

Alternative B - Chemical Insecticide Treatment

Ia. All insecticides considered in this alternative are currently registered by EPA for the control of gypsy moth larvae. This means that in EPA's judgement, available studies indicate that none of these chemicals are likely to cause unreasonable adverse effects in people or the environment when properly used. Special application precautions would be taken near streams, riparian habitat, and municipal water developments.

Ib. Same as Ia. above.

Ic. All realistic doses to the general public from routine spraying would likely pose no significant risk of adverse effects. Some people who are sensitive to chemicals could be affected by routine spraying. These people should be warned of possible harm before spraying. The most severe effects could come as the result of truck spills. Symptoms could range from nausea, to shortness of breath, to death. With prompt medical help, most symptoms could be reversed.

With two possible exceptions, realistic doses to workers from routine operations would have no effects. The two exceptions are mixer/loaders working with acephate and trichlorfon and truck spills. The odds of a truck spill occurring are very low. Effects would be minor and would not last long.

All exposures from routine operations would be below levels that could cause birth defects in the general population.

Id. Monitoring would be required to ensure human health was not jeopardized or in any danger during or following application of chemical insecticides.

Alternative C - Biological Insecticide Treatment

Ia. The use of biological insecticides B. t. or NPV would have no impact on water quality or riparian habitat.

Ib. The use of biological insecticides B. t. or NPV would have no impact on watersheds, wells, or garden crops.

Ic. It is highly unlikely that registered use of B. t., NPV during gypsy moth suppression or eradication projects would pose a human health hazard. However, because of reported infections from B. t. occurring in occupationally exposed workers, caution should be exercised when working with concentrated mixtures.

Id. Monitoring would be required to ensure human health was not jeopardized or endangered during or following application of insecticides.

Alternative D - Integrated Pest Management

Ia. The use of biological insecticides B. t. or NPV as part of an integrated pest management program would have no impact on water quality or riparian habitat.

Ib. The use of biological insecticides B. t. or NPV as part of an integrated pest management program would have no impact on watersheds, wells, or garden crops.

Ic. It is highly unlikely that registered use of B. t. or NPV during gypsy moth suppression or eradication projects would pose a human health hazard. However, because of reported infections from B. t. occurring in occupationally exposed workers, caution should be exercised when working with concentrated mixtures.

Id. Monitoring would be required to ensure human health was not jeopardized or endangered during or following application of insecticides.

ISSUE 2, Effects on Non-Target Species - Concerns would be about the possible effects of chemical and biological insecticides on non-target organisms, including possible gypsy moth natural enemies, wildlife, honeybees, and aquatic insects; and gypsy moth defoliation on wildlife in affected areas.

Responsiveness of each alternative to issues and concerns is indicated by this evaluation criterion:

2a. The degree by which possible gypsy moth natural enemies, wildlife, honeybees, and aquatic insects are affected by the alternative.

Alternative A - No Action

2a. There would be no treatment under this alternative; therefore, there would be no impact on gypsy moth natural enemies, wildlife, honeybees, or aquatic insects. Gypsy moth could eliminate food sources required by other sensitive lepidoptera.

Alternative B - Chemical Insecticide Treatment

2a. The chemicals considered for use with this alternative are registered with EPA for control of several different insects. It is very likely that non-target organisms, including gypsy moth natural enemies, wildlife, honeybees, and aquatic insects would be impacted.

Alternative C - Biological Insecticide Treatment

2a. The biological insecticides considered for use with this alternative, B. t. and NPV, are registered with EPA for control of gypsy moth. It is very unlikely that non-target organisms, including gypsy moth natural enemies, wildlife, honeybees, and aquatic insects would be impacted. B. t. would impact other lepidoptera species that are in the same development stage as gypsy moth.

Alternative D - Integrated Pest Management

2a. The biological insecticides considered for use with this alternative, B. t. and NPV, are registered with EPA for control of gypsy moth. It is very unlikely that non-target organisms, including gypsy moth natural enemies, wildlife, honeybees, and aquatic insects would be impacted. Other lepidoptera species that are in the same development stage as gypsy moth would be impacted.

ISSUE 3, Alternatives to Eradication Programs - There is concern about a need for research on the behavior of the gypsy moth to determine the possible role of natural enemies in maintaining populations at low levels. There is also concern about the viability of an eradication approach and the need for long-range planning and research for an integrated pest management approach.

Responsiveness of each alternative to these issues and concerns is indicated by this evaluation criterion:

3a. How does the alternative affect long range planning and research for integrated pest management.

Alternative A - No Action

3a. The degree by which the alternative allows for natural eradication of gypsy moth. Nothing would prohibit natural process from occurring; however, there is not history of natural eradication of gypsy moth. The insect cycles with each cycle producing a larger infestation.

Alternative B - Chemical Insecticide Treatment

3a. This alternative would hinder the natural eradication of gypsy moth. Natural predators would not remain in the currently affected areas, if gypsy moth larvae were not available as food.

Alternative C - Biological Insecticide Treatment

3a. This alternative would not hinder natural eradication of gypsy moth.

Alternative D - Integrated Pest Management

3a. Natural eradication is an integral part of integrated pest management. There does not appear to be any effect on that process.

Issues 1-3 were taken from the FEIS Gypsy Moth Suppression and Eradication Projects, dated 1985.

ISSUE 4, Gypsy Moth Quarantine - There would be a need for a rapid reduction in the population of gypsy moths to reduce or eliminate the imposed quarantines.

Responsiveness of each alternative to these issues and concerns is indicated by this evaluation criterion:

- 4a. The amount of time necessary to eliminate or reduce the gypsy moth quarantines.

Alternative A - No Action.

4a. With this alternative, there would be no reduction in quarantine length. If gypsy moth remain in their present locations along the Wasatch Front, it appears that additional quarantines and restrictions would be necessary.

Alternative B - Chemical Insecticide Treatment

4a. This alternative would reduce or eliminate gypsy moth populations, thus, reducing the need for quarantines and restrictions.

Alternative C - Biological Insecticide Treatment

4a. This alternative would reduce or eliminate gypsy moth populations, thus, reducing the need for quarantines and restrictions.

Alternative D - Integrated Pest Management

4a. This alternative would reduce or eliminate gypsy moth populations, thus, reducing the need for quarantines and restrictions.

ISSUE 5, Economic Effect - Concern would be about the possible negative impact of the gypsy moth on forest and private lands, if the current infestation were to expand unchecked. Concern would be about the possible negative effects of a continued gypsy moth infestation on property values.

Responsiveness of each alternative to these issues and concerns is indicated by these evaluation criteria:

- 5a. The degree by which the alternative is in line with the overall committee plan for total eradication of gypsy moth

- 5b. How the alternative reduces the negative impact of gypsy moth on property values

- 5c. The degree by which the alternative reduces the negative impact on forest and private land

Alternative A - No Action.

- 5a. This alternative is not in line with the overall committee plan for total eradication of gypsy moth.
- 5b. There would be no reduction of the impacts on private property.
- 5c. There would be no reduction of the impacts on forest and private land.

Alternative B - Chemical Insecticide Treatment

- 5a. This alternative is in line with the overall committee plan for total eradication of gypsy moth. There are, however, environmental reasons for not using chemical insecticide treatment.
- 5b. This alternative would reduce the negative impacts of gypsy moth on private property.
- 5c. This alternative would reduce the negative impacts of gypsy moth on forest and private land.

Alternative C - Biological Insecticide Treatment

- 5a. This alternative is in line with the overall committee plan for total eradication of gypsy moth.
- 5b. This alternative would reduce the negative impacts of gypsy moth on private property.
- 5c. This alternative would reduce the negative impacts of gypsy moth on forest and private land.

Alternative D - Integrated Pest Management

- 5a. This alternative is in line with the overall committee plan for total eradication of gypsy moth.
- 5b. This alternative would reduce the negative impacts of gypsy moth on private property.
- 5c. This alternative would reduce the negative impacts of gypsy moth on forest and private land.

ISSUE 6, The Effect on Threatened and Endangered Species and Sensitive and Locally Rare Species of Lepidoptera - Concern would be for Peregrine falcon in the Salt Lake and Utah County areas and lepidoptera species in Davis, Salt Lake, and Utah County areas.

Responsiveness of each alternative to these issues and concerns is indicated by this evaluation criterion:

6a. The degree by which the alternative reduces the impact on concerned T & E species and locally rare species of lepidoptera

Alternative A - No Action.

6a. Certain wildlife species might benefit if no action were taken to eradicate the gypsy moth. Those species that prey on gypsy moth predators are the most likely to benefit from this alternative. However, those wildlife species that live in areas infested by gypsy moth would have their habitat destroyed and might need to relocate to uninfested areas.

Alternative B - Chemical Insecticide Treatment

6a. Wildlife species that live in infested areas would benefit from the eradication of gypsy moth. Wildlife species that are susceptible to chemical insecticide would be affected.

Alternative C - Biological Insecticide Treatment

6a. Wildlife species that live in infested areas would benefit from the eradication of gypsy moth. The wildlife habitat would return to its natural condition, thus, providing necessary cover and food.

Alternative D - Integrated Pest Management

6a. Wildlife species that live in infested areas would benefit from the eradication of gypsy moth. The wildlife habitat would return to its natural condition, thus, providing necessary cover and food.

ISSUE 7, Wilderness - Concern would be for pest treatment in and adjacent to portions of Mt. Olympus, Lone Peak, and Twin Peaks Wilderness.

Responsiveness of each alternative to these issues and concerns is indicated by these evaluation criteria:

7a. The degree of impact the alternative has on portions of Mt. Olympus, Lone Peak, and Twin Peaks Wilderness

7b. The degree of impact on the wilderness from helicopters flying over the wilderness

7c. The degree long-term wilderness experience is impacted by continued eradication by gypsy moth

Alternative A - No Action

7a. This alternative would have a great deal of impact on the Wilderness. There are approximately 770 acres infested in Mt. Olympus Wilderness, approximately 182 infested in Lone Peak Wilderness, and approximately 65 acres infested in Twin Peaks Wilderness. The No Action Alternative would allow current infestations to increase at or above the same rate they have been increasing since becoming established in these areas. Vegetation in the infested areas would continue to be defoliated and could eventually die. Visual impact would be most noticeable to the many wilderness visitors. The Visual Quality Objective for these areas is Preservation or Retention. Neither VQO could be met if the infestations were allowed to continue and expand. Wildfire hazard would increase due to added fuels thus, posing a threat to wilderness values.

7b. There will be no helicopter flights over Wilderness for spraying purposes. Wilderness experience would not be affected.

7c. Continued defoliation by gypsy moth would alter the wilderness experience. Defoliation is unsightly, and gypsy moth secretions have a very foul odor. Gypsy moth continually reinfest treated areas from non-treated wilderness

Alternative B - Chemical Insecticide Treatment

7a. This alternative would benefit the three Wilderness now infested by gypsy moth. The unsightly impact of gypsy moth defoliation would be reduced or eliminated. There would be a period of time when visitors would be restricted from certain areas within each Wilderness. Visitor restrictions would follow the plan developed for chemical treatment for gypsy moth eradication.

7b. Helicopter flights for spraying purposes would alter the wilderness experience during the period of actual spraying and reconnaissance. Impacts would be short-term.

7c. The wilderness experience would be enhanced following gypsy moth eradication.

Alternative C - Biological Insecticide Treatment

7a. This alternative would benefit the three Wilderness now infested by gypsy moth. The unsightly impact of gypsy moth defoliation would be reduced or eliminated. There would be a period of time when visitors would be restricted from certain areas within each Wilderness. Visitor restrictions would follow the plan developed for biological insecticide eradication of gypsy moth.

7b. Same as Alt. B, 7b.

7c. Same as Alt. B, 7c.

Alternative D - Integrated Pest Management

7a. This alternative would benefit the three Wilderness now infested by gypsy moth. The unsightly impact of gypsy moth defoliation would be reduced or eliminated. There would be a period of time when visitors would be restricted from certain areas within each Wilderness. Visitor restrictions would follow the plan proposed for eradication.

7b. Same as Alt. C, 7b.

7c. Same as Alt. C, 7c.

Management Concerns

Following are additional concerns identified by the Forest Service:

a. Location and protection of Threatened and Endangered (T & E) plant and animal species as well as sensitive species

There is no indication that Threatened and Endangered plants would be affected.

The survey for threatened, endangered, sensitive and locally rare species of diurnal lepidoptera in the 1990 gypsy moth eradication program indicated there were sensitive or locally rare species and subspecies that might be found in the treatment blocks. The species included Incisalia fotis, Callophrys sheridani and Thessalia leanira alma. Neominois ridingsii is very near a treatment block in the Lambs Canyon area in Salt Lake County.

Dr. Whaley's recommendation to reduce impacts or to prevent a species from being eliminated are listed below as mitigation requirements.

1. Conduct surveys in appropriate treatment blocks for I fotis and C sheridani colonies, starting in late March and ending about April 30.

2. Conduct surveys in the Bountiful area for I fotis and C sheridani colonies, starting in late March and ending about April 30.
3. Conduct surveys during May for appropriate T leanira alma habitat within Bountiful treatment area.
4. In the Lambs Canyon area, keep treatment blocks to a minimum to avoid grassy slopes where N ridingsii might be found.
5. To avoid extensive damage or complete eradication to I fotis and T leanira colonies in Provo Canyon the following options could be used: (a) Avoid spraying Cliff Rose areas. (Food plant of I fotis) and common Paintbrush (Food plant of T leanira alma) (b) Removing larva or taking females for eggs and rearing young in captivity until their environment is clear of active insecticide residues. (c) monitoring the effects of treatments on colonies. If needed, reintroduce the colonies.
6. The same options as above might be used for C sheridani. Because this species is often much rarer, it might be difficult to acquire females from colonies. Option (a) would be most suitable.
7. A Lepidopterist, familiar with the boundaries of the non-target butterflies of concern, would be present when insecticide applications were taking place to answer questions and make on-site recommendations.

b. How would eradication mesh with existing activities in the areas to be treated?

Existing activities are assumed to be recreational visits to National Forest System lands and activities associated with schools and residences in the treatment areas. Users participating in activities would be notified by the press and signing would occur within the areas to be treated. If users heed the information provided, there should not be impacts; thus, activity impacts would be short-term.

c. The degree the alternatives comply with Standards and Guidelines found in the Wasatch-Cache and Uinta National Forest Land and Resource Management Plans

The Wasatch-Cache National Forest Land and Resource Management Plan would be amended to permit application of herbicide and pesticide in riparian areas with restrictive mitigation measures.

The Wasatch-Cache National Forest Land and Resource Management Plan of 1985 includes forestwide standards and guideline for management of riparian areas. Page IV-33 includes the following standard:

(s) Aerial application of herbicide and pesticide will not be permitted in riparian areas.

Alternatives A and B do not include the use of biological insecticide treatment applied aerially and are therefore consistent with this direction. Alternatives C and D would not be consistent because of aerial application of Bacillus thuringiensis. Implementation of either one of these alternatives would require a Forest Plan Amendment.

d. Protection of users in recreation facilities

See b, above.

e. Risk of using helicopters over residential areas

There have been no recorded incidents of aircraft spills in gypsy moth projects, so historical records for other forest insect spraying were searched. The probability of an aircraft spill occurring has been calculated as less than 1 chance in 1000. (Taken from pages F-55 and F-66 of Gypsy Moth Suppression and Eradication Projects, Final Environmental Impact Statement as Supplemented - 1985)

The following Management and Mitigation requirements apply to Alternatives B, C, D:

-Treatment methods would meet Forest Plan Standards and Guidelines.

-All registered beekeepers, within areas to be treated with insecticide, would be notified of project plans. They would be informed of the locations, approximate dates of treatment, and methods to avoid possible adverse effects from insecticide.

-Spraying would be done on a week day or days to minimize the number of people denied access to the area. Information would be posted on parking area bulletin boards.

-Aircraft spray equipment calibration testing over wetlands or floodplains would be prohibited.

-Helispots would be located to reduce the risk of environmental contamination from possible insecticide spills.

-Insecticide would be applied according to label instructions.

-Insecticide would not be applied if:

- a. Winds exceeded 10 miles per hour.
- b. Rain was expected to occur within 2 to 6 hours after treatment.
- c. Temperature inversion existed at the site.
- d. Visibility was poor.

-The project leader would place special emphasis upon preventing spraying of areas designated for protection and areas outside designated spray blocks.

-Pilots would fly each spray block for familiarization prior to spraying.

-Helispot managers and other contract administrators would exercise shutdown authority if they observed aircraft safety or application violations.

-Aquatic monitoring, if considered necessary, would be conducted prior to, during, and after application of insecticide. All municipal water supplies and designated streams would be monitored as necessary.

-Spray cards would be utilized to monitor application and calibration.

-Sensitive areas would be buffered, as needed.

-Major highways and streets in the treatment area would be marked with signs during actual spraying.

-Utah Department of Agriculture would work with the Utah Health Department on measures that might be required to safeguard human health. These measures include:

a. Providing information to physicians in the proposed treatment area about the potential effects of proposed insecticide, the signs and symptoms to look for, and the appropriate responses.

b. Providing the public with accurate information on potential risks from proposed insecticide and any necessary personal protective measures.

c. Providing information to potentially sensitive individuals on any personal protective measures.

d. Monitoring and followup on cases of reported contamination.

-Insecticide transportation would be supervised.

Spray systems would be inspected to ensure that positive locking mechanisms were in place which would not trip accidentally, but would release only in response to pilot activation during an emergency. Application equipment would be monitored for leaks and equipment failures.

-A safety plan and a spill plan would be prepared.

-School bus routes would not be directly sprayed if children were present.

CHAPTER V

LIST OF PREPARERS

CHAPTER VI

CONSULTATION WITH OTHERS PUBLIC PROCESS

CHAPTER VI - CONSULTATION WITH OTHERS-PUBLIC INVOLVEMENT PROCESS

The purpose of this chapter is to list individual, groups, and State and Federal agencies, who were consulted in the development of this Environmental Assessment, and to provide information on the public involvement process. The proposal covered in this EA, has not been covered before, except for the areas that are being retreated.

Following are the names of those who participated as an interdisciplinary team in the preparation of this document:

Jim Cook, Chairman
Wasatch-Cache National Forest

Leon LaMadeleine
Intermountain Region Forest Service

Larry Gillham
Salt Lake District Ranger

Jim Keller
Pleasant Grove Ranger District

Bob Benton
U.S. Fish and Wildlife Service

Mark Quilter
Utah State Department of Agriculture

Russ Hone
Salt Lake City Water Department

Richard Kline
Wasatch-Cache National Forest

Following is a list of individuals and groups who were sent copies of the scoping, and public meeting letter for this Environmental Assessment:

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Salt Lake City, UT 84111

KSL TV and Radio
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Salt Lake City, UT 84111

KUTV TV
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Salt Lake City, UT 84130

KTVX TV
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Ogden Standard Examiner
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Ogden, UT 84401

Lakeside Review
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The following is a list of individuals and groups who were sent copies of this Environmental Assessment:

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Mayor Larry Smith
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State of Utah
Governor Norm Bangerter
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116 State Capitol Building
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100 East Center, Suite 2300
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Utah Wilderness Association
Dick Carter
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Salt Lake City, UT 84111

The following information pertains to the public meeting regarding the preparation of this Environmental Assessment:



United States
Department of
Agriculture

Forest
Service

Wasatch-Cache
National
Forest

8230 Federal Building
125 South State Street
Salt Lake City, UT 84138
(801) 524-5030

Reply to: 1950/3450

Date: January 16, 1990

Greetings:

The Gypsy Moth Eradication Program that started in 1989 is being proposed for continuation in 1990. These moths were discovered in the Salt Lake area in 1988. Trapping surveys in 1989 found infestations of the moths in the Bountiful area of Davis County, on the benches and mountains east of Salt Lake City in Salt Lake County, and east of Orem and Provo in Utah County. The total area proposed for the eradication project is 20,064 acres. 10,911 acres are non-federal lands and the remaining 9,153 acres are National Forest lands within the Wasatch-Cache and Uinta National Forests. Eradication is being proposed to prevent the spread of this infestation to other parts of the state.

An Environmental Assessment is being prepared for the proposed eradication program. Federal, state, local agencies, and other individuals or organizations who may be interested in or affected by the project are invited to participate in this assessment. This will result in the identification of any additional alternatives to be considered, and the suggestion of mitigating measures.

The alternatives to the eradication that have been identified so far are: Aerial treatment of the infested areas with a natural bacteria which only affects caterpillars, aerial or ground treatment of infested areas with chemicals, mass trapping of Gypsy Moths, or do nothing at all. Any other alternatives that this process identifies will also be addressed.

Public meetings have been scheduled to better inform the local public concerning the Gypsy Moth, its spread, and its potential devastation to vegetation. These meetings will also be used to explain the environmental assessment that is underway and to accept public comments on the proposal. These meetings are scheduled as follows:

Davis County - Bountiful City Hall - 7 p.m. on February 1, 1990.

790 South 100 East, Bountiful, Utah

Salt Lake County - Churchhill Jr. High School - 7 p.m. on February 7, 1990.

3450 East Oakview Dr., Salt Lake City, Utah

Utah County - Timp View High School - 7 p.m. on February 8, 1990.

3650 North 650 East, Provo, Utah

Caring for the Land and Serving People





Written comments concerning this proposal should be sent to the Forest Supervisor, Wasatch-Cache National Forest, 8230 Federal Building, Salt Lake City, Utah 84138. Comments should be received by February 10, 1990, and the assessment should be completed by March 1, 1990.

Enclosed with this letter is a brochure about Gypsy Moths and maps of the proposed spray areas.

Sincerely,

DALE N. BOSWORTH
Forest Supervisor



Utah County gearing up for gypsy moth menace

By Michael Morris
Deseret News staff writer

PROVO — Most Utah County residents were able to ignore reports last year of efforts to eradicate the gypsy moth from the Olympus Cove area of Salt Lake County.

They won't be so lucky this year.

The moth, which has become the subject of a five-year, \$2.5 million statewide eradication effort, has found its way to lower Provo Canyon and northeast Provo, as far south as Rock Canyon. State officials plan to halt the pest's spread this spring by spraying about 5,550 acres with a biological insecticide known as bacillus thuringiensis.

"We've got them down here now," said Loyal Clark, Uinta National Forest spokeswoman. "We were hoping they weren't going to come down, but we're extremely fortunate that we could catch them down here before they got worse."

Stop the moth

What you can do to stop the gypsy moth:

- Report moth sightings to the Utah Department of Agriculture or Utah Division of Lands and Forestry.
- Encourage people who have moved to Utah from the Northeast to have their vehicles inspected.
- Cooperate with state, federal and local jurisdictions in eradication efforts.
- Do not move furniture, firewood, plants or construction materials from moth-infested areas without inspection.

female.

Approximately 225 male moths were crowded into one trap placed in a ravine above Timpanogos High School, Clark said.

The gypsy moth, which has made its way west after being introduced in Massachusetts from Europe in 1869, reproduces rapidly and feeds on a wide range of plants and trees including fruit trees, oak and oak brush. The moth has defoliated nearly 100,000 square miles of trees in the eastern United States.

"They eat anything, and everything as far as deciduous trees are concerned," Clark said. "They can completely defoliate a grove of trees in one summer. They're basically a nuisance."

The moth first was detected in Salt Lake City in summer 1988, and isolated infestations were discovered last May in Provo and Bountiful. Pheromone-laced traps were planted in the infestation areas to attract males, thus reducing the male population and fertilization of the

the Olympus Cove area. 95 percent of moth larvae were eradicated. Owners of about 100 homes in the proposed spray area of northeast Provo have been notified that spraying will occur near the end of April.

Clark described the biological insecticide used on the moths as "an active bacteria that occurs naturally in the soil. It does not pose a threat to humans or animals."

Officials will recheck the area for moths during the summer, and traps will be placed in other Utah County areas and along the Wasatch Front to check for further infestations. Homeowners living in the spray area will be required to inspect for larvae in July or August or face a penalty of \$5,000, Clark said.

She said infestations of the moth, which cannot fly long distances, are spread as egg larvae are transported to new locations.

"It's almost as if they knew they were going to have to lay eggs on something that moves," Clark said, adding that agriculture and forestry officials fear the moth may continue to spread.

GYPSY MOTH INFORMATION AND PUBLIC PARTICIPATION MEETING
CHURCHILL JR. HIGH SCHOOL
3450 EAST OAKVIEW DRIVE, SALT LAKE CITY, UTAH

February 7, 1990
7:00 p.m.

AGENDA

Welcome.....	Ralph Hawkes, Mount Olympus Community Council
Introduction.....	Dick Kline, Wasatch-Cache National Forest
Purpose of Meeting	
Video of past operations	10 MINUTES
Environmental Assessment Process.....	Jim Cook, Wasatch-Cache National Forest
Need for assessment	
Issues and concerns	5 MINUTES
Alternative selections	
Biology of Gypsy Moth & Impacts.....	Dave Holland, US Forest Service Pest Management
Slides of gypsy moths	
Defoliation	10 MINUTES
Impacts	
Detection and Quarantine.....	Mark Quilter, Utah Department of Agriculture
Trapping	
Mapping	15 MINUTES
Proposed Treatment	
Quarantine	

QUESTIONS AND ANSWERS
Jim Cook, Moderator

GYPSY MOTH INFORMATION AND PUBLIC PARTICIPATION MEETING
BOUNTIFUL CITY HALL
790 SOUTH 100 EAST, BOUNTIFUL, UTAH

February 1, 1990
7:00 p.m.

AGENDA

Welcome.....Neal Jenkins, Bountiful Parks and Recreation
Introduction of Gypsy Moth Program
and Status in Utah.....Mark Quilter, Plant Industry
Utah Department of Agriculture
Biology of Gypsy Moth.....Dave Holland, US Forest Service
Pest Management
Proposed Control Program.....Leon LaMadeleine, US Forest Service
Pest Management
Video of Past Operation.....Dick Kline, Wasatch-Cache National Forest
Quarantine Regulations.....Ed Bianco, State Entomologist
Utah Department of Agriculture
Environmental Assessment Process.....Jim Cook, Wasatch-Cache National Forest

QUESTION AND ANSWER SESSION

Moderator, Jim Cook.....Wasatch-Cache National Forest

PANEL MEMBERS:

Mike Schwinn.....Utah Division of Wildlife Resources
Ed Bianco.....Utah Department of Agriculture
Tom Crowe.....US Plant and Animal Health Information
Dave Holland.....USDA Forest Service
Larry Gillham.....Wasatch-Cache National Forest
Dave Wilding.....Bountiful City Water Department
Lou Olsen.....Federal Aviation Administration

GYPSY MOTH INFORMATION AND PUBLIC PARTICIPATION MEETING
BOUNTIFUL CITY HALL
790 SOUTH 100 EAST, BOUNTIFUL, UTAH

February 1, 1990
7:00 p.m.

AGENDA

Welcome.....Neal Jenkins, Bountiful Parks and Recreation
Introduction of Gypsy Moth Program and Status in Utah.....Mark Quilter, Plant Industry Utah Department of Agriculture
Biology of Gypsy Moth.....Dave Holland, US Forest Service Pest Management
Proposed Control Program.....Leon LaMadeleine, US Forest Service Pest Management
Video of Past Operation.....Dick Kline, Wasatch-Cache National Forest
Quarantine Regulations.....Ed Bianco, State Entomologist Utah Department of Agriculture
Environmental Assessment Process.....Jim Cook, Wasatch-Cache National Forest

QUESTION AND ANSWER SESSION

Moderator, Jim Cook.....Wasatch-Cache National Forest

PANEL MEMBERS:

Mike Schwinn.....Utah Division of Wildlife Resources
Ed Bianco.....Utah Department of Agriculture
Tom Crowe.....US Plant and Animal Health Information
Dave Holland.....USDA Forest Service
Larry Gillham.....Wasatch-Cache National Forest
Dave Wilding.....Bountiful City Water Department
Lou Olsen.....Federal Aviation Administration

Utah plans attack on gypsy moth

More than 20,000 acres will be sprayed this year

Standard-Examiner staff and wire reports

More than 20,000 acres in Salt Lake, Davis and Utah counties will be sprayed with a biological insecticide this year to control an infestation of gypsy moths, state officials say.

The program is a major expansion of the 1989 spraying effort, which involved 1,200 acres in the Olympus Cove area of Salt Lake County.

State entomologist Edward Bianco said the need for the expanded program was determined after biologists collected gypsy moth traps from around the state that showed the infestation was more extensive than initially believed.

Proposed quarantine areas include the east bench of Bountiful; all homes east of Wasatch Boulevard or its projected southward extension between Parleys Canyon to Draper; and the east bench of Orem. Detailed maps providing the boundaries will be released later.

Jim Cook, a forester for the Wasatch-Cache National Forest, said 9,100 acres of the area proposed for treatment is managed by the Forest Service. The rest is private property.

Cook said an environmental assessment is being prepared on the 1990 spray program. Public meetings to explain the project and accept comments on the environmental study are scheduled for 7 p.m. Feb. 1 in Bountiful at city hall, Feb. 7 in Holladay and Feb. 8 in Provo.

Cook said the proposed treatment process is virtually identical to last year's. A low-flying helicopter would spray bacillus thuringiensis, a naturally occurring biological agent, on the infested area during the early stages of the gypsy moth's life cycle.

The organism causes a fatal stomach infection in the larvae of moths and butterflies.

Ogden Standard Examiner
Jan. 24, 1990

Deseret NEWS Jan 24 1990

Meetings set on moth spraying program

At least three public meetings are scheduled in February to discuss the state's chemical spraying program to fight the gypsy moth.

More than 20,000 acres in Salt Lake, Davis and Utah counties will be sprayed with a biological insecticide in 1990 to battle an infestation of the pest, according to Edward Bianco, state entomologist.

The areas to be sprayed are situated in proposed quarantine areas along the east bench in Bountiful, east of Wasatch Boulevard between Parleys Canyon and Draper in Salt Lake County and the east bench of Orem.

Jim Cook, a forester for the Wasatch-Cache National Forest, said an environmental assessment is being prepared on this year's spray program and the public meetings are being held to explain the project and accept comments on the environmental study.

The meetings, all at 7 p.m., will be held Feb. 1 in Bountiful City Hall, Feb. 7 at Churchill Junior High School, 3450 E. Oakview Dr., Holladay; and Feb. 8 at Timp View High School, Provo.

State to Attack Gypsy Moth In Bigger Area

More than 20,000 acres of land in Salt Lake, Davis and Utah counties will be sprayed with a biological insecticide this year to control an infestation of gypsy moth — a pest which can strip trees of their foliage.

This is a major expansion of the 1989 spray program, which included only 1,200 acres in the Olympus Cove area of Salt Lake County.

Edward Bianco, state entomologist, said the need for the expanded program was determined after biologists collected gypsy moth traps from around the state. Those traps showed the infestation was more extensive than previously believed.

The quarantine area is also proposed for expansion in 1990 to prevent the spread of the gypsy moth. People living in a quarantined area are required to inspect their property for gypsy moth eggs before moving it from the area.

The proposed quarantine areas are: The east bench of Bountiful; all homes east of Wasatch Boulevard or its projected southward extension between Parleys Canyon to Draper; and the east bench of Orem. Detailed maps providing the boundaries will be released later.

Jim Cook, a forester for the Wasatch-Cache National Forest, said 9,100 acres of the area proposed for treatment is managed by the Forest Service; the rest is private property.

Portions of three Forest Service wilderness areas are scheduled for treatment. They are the Lone Peak, Twin Peaks and Mount Olympus wildernesses. The law creating these areas contains provisions which allow insect control when adjacent lands are threatened.

Mr. Cook said an environmental assessment is being prepared on the 1990 spray program. Public meetings to explain the project and accept comments on the environmental study are scheduled for:

— Feb. 1 at 7 p.m., Bountiful City Hall.

— Feb. 7 at 7 p.m., Churchill Junior High School, 3450 E. Oakview Dr., Holladay.

— Feb. 8 at 7 p.m., Timp View High School, Provo.

Mr. Cook said the proposed treatment process is virtually identical to last year's. A low-flying helicopter would spray a naturally occurring biological agent — *bacillus thuringiensis* — on the infested area during the early stages of the gypsy moth's life cycle. This short-lived organism causes a fatal stomach infection in the larvae of moths and butterflies.

1990

Jan 23

Salt Lake Tribune

Gypsy Moths Are Expanding Domain Despite Spraying, Says UDA Director

By Robert Green
Tribune Staff Writer

The gypsy moth, despite pesticide treatments, has expanded its domain and will require extensive treatment next year, according to Van Burgess, director of plant industry at Utah Department of Agriculture.

Large infestations of gypsy moths have been detected in three main areas along the Wasatch Front, he said. Heavy concentrations of moths have been found east of Mount Olympus Cove, the Bountiful foothills and the mouth of Provo Canyon.

"In some areas, we found from 20 to 30 moths a trap," he said. "Anytime we have multiple catches, the area should be considered for treatment."

The moths have infected a much larger area this year and they'll be treated by aerial spraying programs, Mr. Burgess said.

The control area will total less than 65,000 acres, compared to a spraying area of less than 1,300 acres in 1989.

Much of the land will be on Forest Service Property and a small percentage — yet to be mapped out — will be in the Mt. Olympus, Lone Peak and Twin Peaks wilderness areas said Mark Quilter, UDA inspector.

"We won't know the exact acreage infested until all data from high mountain trapping is computed," Mr. Quilter said. "But the moth has inhabited wilderness areas in greater scope."

Although gypsy moth populations are indeed growing, the pest has been more noticeable because of improved trapping methods, said Tom Crow, officer in

charge of plant protection and quarantine at U.S. Department of Agriculture, Animal and Plant Health Inspection Services.

"It's not that the moth has actually moved into these areas," Mr. Crowe said, "We're finding more moths because of a more extensive trapping program."

Mr. Crowe mentioned a full-scale trapping program was recently implemented this year, after a moth flare-up was reported in 1988.

To combat the pest, nearly 30 specialists from local, state and federal agencies have organized a Utah Gypsy Moth Coordinating Committee and will be meeting throughout the winter to determine the environmental impact, size, scope and cost of the spraying programs.

At a meeting last week, the committee reviewed trapping results, effectiveness of previous sprayings and the quarantine in Mount Olympus Cove.

It was revealed that ground sprayings by Provo and Bountiful were effective in killing gypsy moth larvae in the control area. But the moth population has exploded on untreated ground.

In Bountiful, the heaviest concentrations were found adjacent to areas that were sprayed last year, said Mr. Burgess. Moth populations flared up along east benches and on Forest Service Property up by Mueller Park.

In Salt Lake County, an aerial spraying was 95 percent effective using the pesticide *Bacillus Thuringiensis*, BT, a naturally occurring bacteria, said Mr. Quilter. It will take four to five years for

complete eradication of the moth, he said.

Pesticides must be applied during the gypsy moth's first two stages of growth — from May to the end of June — for it to work. Sprayings are timed with hatchings.

In the next meeting Dec. 7, the committee will also be looking at different pesticides, such as a synthetic growth regulator, that requires reduced applications for a shorter period of time, said Mr. Quilter.

"With chemical pesticides, it might be possible to spray fewer years and thereby lessen the environmental damage," he said, "We'll have to weigh all the factors."

Subcommittees have been formed to work on pesticide selection, environmental assessment, contract preparation, trapping, quarantine and public relations.

The moth can devastate forests and watersheds, as well as damage landscapes and fruit trees. So far, the moth has defoliated several acres in the Olympus Cove area, but if populations go unchecked, the pest could develop into a great nuisance.

"Homeowners have complained about caterpillars crawling all over the place and hanging on silken threads," said Mr. Quilter. "They also trigger an allergic reaction in some people."

If populations go unchecked, the moth will overcome homes, eating lawns, shrubs, even pine trees, said Mr. Quilter. They've been known to cover the side of a house.

REFERENCES

Following is a list of primary sources used to complete the Environmental Assessment on Gypsy Moth Eradication on the Wasatch-Cache and Uinta National Forests.

Copies of these documents are available for review at the Supervisors Offices, Wasatch-Cache, and Uinta National Forests.

Gypsy Moth Suppression and Eradication Projects Final Environmental Impact Statement as Supplemented - 1985

Gypsy Moth Suppression and Eradication Projects Final Addendum to the Final Environmental Impact Statement as Supplemented - 1985

Environmental Assessment Gypsy Moth Eradication Spay Program, Salt Lake County, Utah 1989, Alfred M. Rivas

Final Report, A survey for threatened, endangered, sensitive and locally rare species of diurnal lepidoptera in the Utah 1990, Gypsy Moth eradication program. Wayne H. Whaley, Ph. D. (Zoologist)

A Summary of Utah's 1989, Gypsy Moth Eradication Program, Steve Munson, USFS, and Mark Quilter, UDOA 1989

Environmental Assessment, 1989, Cooperative Gypsy Moth Suppression Project, Pennsylvania Department of Environmental Resources

Uinta National Forest Land and Resource Management Plan, 1984

Wasatch-Cache National Forest Land and Resource Management Plan, 1984

Letter to Jim Cook, Wasatch-Cache National Forest, from Bob Benton, U.S. Fish and Wildlife Service

Biological Assessment for Gypsy Moth Eradication Treatment, Jim Cole, Wildlife Biologist, Wasatch-Cache National Forest, 1990

Discussion with Dr. Fred Mangum obtained list of Macroinvertebrate Taxa for Wasatch Front Stream within the Proposed Gypsy Moth Treatment Areas

APPENDIX

APPENDIX

Wasatch-Cache National Forest Land and Resource Management Plan, Amendment No. 4, 3/1/90

Biological Assessment for the Gypsy Moth Eradication Treatment, U. S. Fish and Wildlife Service

Letter from Rodney John, State of Utah Department of Natural Resource, Division of Wildlife Resources.

Letter from LeRoy W. Hooten, Jr., Salt Lake City Corporation, Department of Public Utilities

Letter from Dr. Douglas A. Boyce, Data Manager/Zoologist, Utah Natural Heritage Program, The Nature Conservancy, State Arboretum of Utah, Department of Natural Resources

Letter from Thomas R. Scott, Archeologist, Wasatch-Cache National Forest

General list of Macroinvertebrate Taxa, from Dr. Fred Mangum

Justification for B t selection

WASATCH-CACHE NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

AMENDMENT NO. 4

3/1/90

For Riparian Management - Standards and Guidelines, the Forest Plan on page IV-33 reads:

Current Standard

(S) Aerial application of herbicide and pesticide will not be permitted in riparian areas.

This amendment will change to wording to:

New Standard

(S) Aerial application of herbicide and pesticide will be permitted in riparian areas with restrictive mitigation measures.



United States
Department of
Agriculture

Forest
Service

Wasatch-Cache
National
Forest

8236 Federal Building
125 South State Street
Salt Lake City, UT 84138
(801) 524-5030

Reply to: 2600

Date: March 7, 1990

Mr. Robert Benton
U.S. Fish and Wildlife Service
1745 West 1700 South
Salt Lake City, UT 84104

Dear Bob:

Enclosed is our Biological Assessment for the proposed Gypsy Moth Eradication Spray Program for 1990 as discussed with you, Jim Cole, and Jim Cook (on my staff). Please review and give us your concurrence if acceptable.

We appreciate your assistance during the Environmental Assessment as part of the Interdisciplinary Study Team and for the help in putting together the Biological Assessment.

Sincerely,

SUSAN GIANNETTINO
Acting Forest Supervisor



BIOLOGICAL ASSESSMENT
for THE
GYPSY MOTH ERADICATION TREATMENT

Jim Cole, Wildlife Biologist
February, 1990

Introduction

This assessment is generated by the proposal to treat areas in Davis, Salt Lake, and Utah counties along the "east bench" at the foot of the Wasatch Mountains for the eradication of the gypsy moth. Classified species which will be evaluated here include the endangered peregrine falcon and the endangered June sucker.

Proposed Action

The treatment is proposed for 9,153 federal acres and 10,911 non-federal acres, including 1,190 acres which were treated in 1989. The treatment would be an application of the commercial formulation Foray 48b which consists of Bacillus thuringiensis kurstaki (Bt) in an aqueous solution with non-organic solvents as the surfactant. Treatment will involve three separate aerial applications.

Peregrine Falcon

A nesting pair of peregrines uses the Hotel Utah in Salt Lake City (outside treatment area), while a non-producing pair has been observed in the Slate Creek area in Utah County.

No direct impacts on peregrines are known for Bt. The bacteria is a naturally occurring organism that is highly specific against lepidopterous larvae. Indirect effects may include the reduction in the peregrines prey base (which is almost exclusively bird species) due to a temporary reduction in lepidoptera species. The Hotel Utah pair may feed in the Davis and Salt Lake County foothill and canyon treatment areas, although preferred feeding areas include croplands, marshes, and river bottoms. The Utah County pair occurs within the treatment area. Again, the potential impact is largely one of a possible reduction in the prey base. This reduction would be short-term and would likely be buffered by the peregrines use of other prey species which do not feed on lepidoptera.

June Sucker

The June sucker is found in the lower reaches of the Provo River adjacent to Utah Lake. The species found well below the National Forest Boundary and outside of the treatment area. The sucker feeds along the stream bottom on various macro-invertebrates and other organisms, and spawns in finer gravels in the Provo River during the spring.

No direct or indirect impacts are anticipated to occur on this species since the treatment area is more than five miles upstream from June sucker habitat.

The Bt formulation has no apparent effect on macro-invertebrate populations (Fred Mangum, personal communication). Also, the Bt formulation will be applied parallel to the stream course to minimize the amount of formulation which enters the stream. Due to the nature of the formulation, it is not persistent in aquatic systems.

Conclusions

Based on the above assessment it is anticipated that neither classified species will experience any population change as a result of the proposed treatment. No direct impacts would be experienced by either species. Any indirect impacts on the peregrine would be insignificant and short-term (possible reduction in food sources for lepidoptera dependent prey species).



Norman H. Bangerter
Governor
Dee C. Hansen
Executive Director
Timothy H. Provan
Division Director

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES

JAN 26 1990

Central Region
1115 North Main Street
Springville, Utah 84663-1055
801-489-5678

January 23, 1990

Dale N. Bosworth, Forest Supervisor
Wasatch-Cache National Forest
8230 Federal Building
Salt Lake City, Utah 84138

Dear Dale:

We received the proposal for continuation of the Gypsy Moth Eradication Program in 1990 and offer the following comments pertaining to the areas located in Salt Lake County and Utah County which are located within the Central Region. As far as we know, there were no wildlife impacts resulting from last year's eradication program in Salt Lake County. It is our understanding that program consisted of aerial treatment with a natural bacteria which only affected caterpillars.

We have reviewed the alternatives to the eradication that have been identified so far and have none to add. In view of the apparent lack of environmental impacts associated with last year's program of aerial treatment of the infested areas with a natural bacteria which only affects caterpillars, we recommend that alternative be chosen for this year's program.

We appreciate the opportunity for reviewing and providing input to the proposal. We would also appreciate a copy of the environmental assessment when it is completed.

Sincerely,

Rodney T. John
Central Regional Supervisor

RTJ/KLN/lh

cc: SLO/RAS

FEF 13 101

cc to DI
cc to Riffle
file 2520
RP Rick Patter

LERoy W. HOOTON, JR.
DIRECTOR

WENDELL E. EVENSEN, P.E.
SUPERINTENDENT
WATER SUPPLY & WATERWORKS

E. TIM DOXEY
SUPERINTENDENT
WATER RECLAMATION

JAMES M. LEWIS, C.P.A.
CHIEF FINANCE &
ACCOUNTING OFFICER

GEORGE JORGENSEN, P.E.
CHIEF ENGINEER

SALT LAKE CITY CORPORATION

DEPARTMENT OF PUBLIC UTILITIES

Water Supply & Waterworks
Water Reclamation

1530 SOUTH WEST TEMPLE
SALT LAKE CITY, UTAH 84115

PALMER DEPAULIS
MAYOR

February 9, 1990

Mr. Dale Bosworth
Forest Supervisor
8030 Federal Bldg.
Salt Lake City, UT 84138

Dear Dale:

After completing our watershed sampling program to determine what impact the Gypsy Moth Eradication Spray Project had on Millcreek Canyon watershed last year, we have determined that based on this particular sampling program there was no significant effect on the water quality of the stream due to the Gypsy Moth spraying.

This department will once again have a watershed sampling program during the 1990 Gypsy Moth Eradication Spray Project. This new sampling program will be on a much larger scale than last year but will parallel last year's procedures. We intend to include the Parley's, Millcreek, Big Cottonwood and Little Cottonwood watersheds in the 1990 sampling project.

If you have any questions please contact me at my office 483-6768.

Sincerely,


LeRoy W. Hooton, Jr.
Director

LWH:RKH:mfs

Utah Natural Heritage Program

THE NATURE CONSERVANCY
STATE ARBORETUM OF UTAH
DEPARTMENT OF NATURAL RESOURCES

Joel Tuhy
Coordinator

3 Triad Center, Suite 400
Salt Lake City, Utah 84180-1204
801-538-5524

February 6, 1990

Mr. Jim Cook
Wasatch-Cache National Forest
Federal Building, Rm 8432
125 South State Street
Salt Lake City, Utah 84138

Dear Mr. Cook:

I've reviewed the preliminary "Environmental Assessment for Gypsy Moth eradication Wasatch-Cache and Uinta National Forests" and have the following comments. In summary, this preliminary environmental assessment (EA) does not address important biological issues concerning project effect upon endangered Peregrine Falcons (Falco peregrinus) or on non-target Lepidoptera (moths and butterflies) that may be rare, colonial, or have disjunct populations far from their main gene pool. Also, no mention is made of the potential impact on the Spotted Frog (Rana pretiosa) which is being considered by the United States Fish and Wildlife Service for listing as threatened or endangered.

No mention is made that Bacillus thuringiensis is a lepicide (kills butterfly and moth larva) and that those species in the order Lepidoptera having a phenology similar to the Gypsy Moth may be at high risk. Dr. Wayne Whaley and members of the Lepidoptera Society have informed me that over 1,000 species of moths and butterflies occur along the Wasatch Front. The EA makes no attempt to address the project's impact on those species. Has the Forest Service determined which species are at greatest risk? If so, why isn't this stated?

I know, for example, that Dr. Whaley played an important role last year in finding locations of Lepidoptera (those that are rare, colonial, or have disjunct distributions) so that this year's spraying would not eliminate them. The EA should spell out exactly what measures the U.S. Department of Agriculture will take in 1990 to reduce the risks of extinction on those non-target species which are particularly vulnerable. How is Dr. Whaley's information being incorporated into the planning process?

The Spotted Frog has declined precipitously along the Wasatch Front (including on National Forest lands) and elsewhere in Utah in recent years. The Utah Nature Study Society has formally petitioned the U.S. Fish and Wildlife Service to add the Spotted Frog to the list of threatened and endangered species. Because

Mr. Jim Cook
February 6, 1990
Page 2

similar declines have occurred in other states, it seems likely to be listed. No mention is made in the EA whether the spray will affect the Spotted Frog. Has the Forest Service inventoried Spotted Frog habitat and determined there is no threat? Has the Forest Service contacted the U.S. Fish and Wildlife Service about the listing status of the Spotted Frog? Has the Forest Service talked with Mr. Peter Hovingh (Utah Nature Study Society) about distribution of the Spotted Frog (both current and recent past) relative to the spray blocks?

Peregrine Falcons are known to occur near the spray zone. No assessment was provided on how the spray may or may not impact them directly or indirectly. Peregrine Falcons are known predators of insectivorous birds. What percent of the prey taken by the local peregrines is insectivorous? Will the eradication project reduce prey of insectivorous birds and, as a result, reduce the birds which the peregrines must rely upon for food? Has the Forest Service contacted Dr. Clayton M. White (Brigham Young University, Dept. of Zoology) or Bob Walters (Utah Division of Wildlife, program manager for non-game birds) for information about the food habits of the 'at risk' Peregrine Falcons?

Page I-6 'Issue 2.' The word "speciess" should be spelled "species".

Page II-2 'Alternative C:' Bacillun should be spelled Bacillus

Why is the 1989 spray area being sprayed again? Does this mean the 1990 spray zones, which are much larger in size, will need to be sprayed again in 1991? What impact does repetitive spraying have on non-target species?

Page III-10 'Birds' The Peregrine Falcon is not mentioned. There is no statement on how the project will impact birds.

'other animals and birds' No mention is made of the 1,000+ species of Lepidoptera that exist or of the Spotted Frog.

Page III-11 'threatened and endangered wildlife' No mention is made of what the effect will be on Peregrine Falcons.

The Endangered Species Act of 1973 is NOT called "The Rare and Endangered Species Act of 1973".

Mention should be made that the Endangered Species Act (ESA) does not allow 'take'. Take has been interpreted by federal courts to include federal or

Mr. Jim Cook
February 6, 1990
Page 3

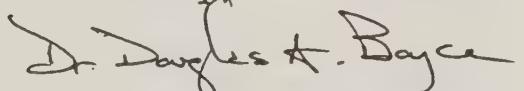
state actions that degrade the environment in such a way as to lead to the removal of an endangered species. The Gypsy Moth EA does not address whether the spray would reduce Peregrine Falcon prey, thus degrading Peregrine Falcon habitat and potentially resulting in "take" of Peregrine Falcons.

Page IV-4. 'Issue 2.' This is an incomplete thought.

'Alternative C' I've seen no evidence in the EA documenting that the project would have "unlikely" or "very unlikely" adverse impacts on non-target wildlife. Considering that over 1,000 species of butterflies and moths potentially occur in the spray blocks and that Bacillus thuringiensis is a lepicide that kills larval moths and butterflies, I find the EA conclusions misleading. Where are the data to support that finding?

This concludes the comments I have on preliminary EA. I hope they have been helpful and thought provoking. Should you have any questions regarding the issues raised, or if you would like to discuss them further please feel free to call.

Sincerely,



Dr. Douglas A. Boyce
Data Manager/Zoologist

United States
Department of
Agriculture

Forest
Service

Wasatch-Cache
National
Forest

8236 Federal Building
125 South State Street
Salt Lake City, UT 84138
(801) 524-5030

Reply to: 2360

Date: March 8, 1990

Gary Coleman
Coleman Associates
190 S. Center
P.O. Box 106
Midway, Utah 84049

Subject: Cultural Resource Values - Gypsy Moth Project

Dear Gary:

Jim Cook of the Wasatch-Cache Forest provided me with maps that delineate the areas covered by the Gypsy Moth project in Davis, Salt Lake, and Utah counties. I am also familiar with the nature of the work that will be required to carry out the project: inventory of the populations, followed by suppression and eradication through aerial and ground spraying.

While some cultural resources are clearly in the areas covered by Jim's maps, and others may exist that we do not know of, the kinds of activities that are proposed will have no deleterious effect on prehistoric or historic sites. I would not recommend that any field work for cultural resources precede this undertaking, and that the work go on as planned.

I will send a copy of this letter to the Utah State Historic Preservation Office for their records.

Sincerely,



THOMAS R. SCOTT
Archeologist

GENERAL LIST OF MACROINVERTEBRATE TAXA
FOR WASATCH FRONT STREAMS
WITHIN THE PROPOSED GYPSY MOTH TREATMENT AREAS.
INFORMATION FROM DR. FRED MANGUM.

Ephemeroptera

Baetis sp.
Heptageniidae
Heptagenia sp.
Rhithrogena sp.
Epeorus sp.
Paraleptophlebia sp.
Ephemerella doddsi
Ephemerella grandis
Ephemerella inermis

Plecoptera

Zapada cinctipes
zapada sp.
Taeniopterygidae
Pteronarcella badia
Pteronarcys californica
Isoperla fulva
Hesperoperla pacifica

Tichoptera

Rhyacaphila sp.
Agapetus sp.
Hydropsyche sp.
Arctepsyche sp.
Hydroptilidae
Oecetis sp.
Limnephilidae
Brachycentrus americanus

Coleoptera

Elmidae
Hydrophilidae

Diptera

Antocha monticola
Dicraneta sp.

Holorusia grandis
Psychodidae
Simulium sp
Chironomidae
Ceratopogonidae
Atherix pachypus
Empididea

Other Macroinvertebrates

Planaria
Nematoda
Gastropoda
Pelecypoda
Oligochaeta
Hirudinea
Amphipoda
Hydracarina
Others.

JUSTIFICATION FOR Bt SELECTION

1. Allow the Moth to Spread Unchecked:

In this alternative, no federal funds would be spent to suppress the insect on Federal, State or private lands for eradication purposes. The gypsy moth would be allowed to spread from infested to uninfested areas along the Wasatch Front. Insect populations would build to outbreak levels and eventually collapse due to natural causes. No attempt would be made to prevent the insect from defoliating forested areas or to minimize the associated tree mortality.

Reason for elimination: This alternative was not selected because it is unreasonable to assume that the elimination of Federal funds for cooperative State eradication would also prevent State agencies, industrial or private landowners, towns or communities from initiating eventual suppression at their own expense. Such suppression would be directed at protecting valuable shade and ornamental trees in parks, developed recreation areas, towns and communities as well as high value forest stands. Any EPA-registered insecticide approved for gypsy moth suppression could be used, provided label instructions were followed. In general, suppression efforts would lack an overall coordinated approach between communities, towns or individuals and may involve the use of insecticides that have significant adverse effects on the environment.

2. Use Diflubenzuron Only:

Diflubenzuron would be the only tactic used in the Utah Eradication Project to achieve the goals of eliminating this pest from the Wasatch Front.

Reason for elimination: This alternative did not meet minimizing the effects on nontarget organisms. It also had label restrictions regarding its application over water with little to no canopy. Since the Bt product performed at or above the expected levels of suppression in 1989, the Salt Lake City Water Shed Management staff felt that Bt use should be continued in the 1990 program. Adding a chemical insecticide to the Salt Lake City water shed should only be considered if the Bt material did not perform at the expected level of performance for population reduction.

3. Application of Carbaryl, Acephate, and Trichlorfon:

Carbaryl is a broad spectrum organocarbamate compound that kills insects by both contact action and stomach poisoning. Acephate and trichlorfon are broad spectrum organophosphate compounds used as contact insecticides. All have a cholinesterase-inhibiting mode of action. They may be applied from the ground or by aerial spraying to achieve population reduction in heavy to light gypsy moth populations. Acephate may also be used as a systemic insecticide to protect valuable ornamentals by introducing the chemical into the sap stream of the tree. The insecticide is then translocated to the tree crown, where it kills insects feeding on the foliage.

Reason for elimination:

Originally, these insecticides were considered along with diflubenzuron as methods of eradicating the gypsy moth. However, based on management concerns and public input, it was decided not to include them as viable eradication tools. These chemical insecticides are more impacting to nontarget insects, killing insects in all life stages except eggs. Honey bees and aquatic insects are particularly susceptible. Carbaryl and acephate have long residual characteristics. Trichlorfon is no longer produced commercially as a gypsy moth insecticide, and is not available. Although all three chemical insecticides have been approved for use by EPA and addressed in the "Gypsy Moth Suppression and Eradication Projects: Final Environmental Impact Statement, as supplemented, 1985," subsequent State suppression and eradication projects have not included them. Less environmentally-impacting treatments have been used and proven effective.





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